THE IRON AGE — September 14, 1933

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..THE IRON AGE..

SEPTEMBER 14, 1933

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Talk or Action? A Challenge to National Leadership

STEEL output, which rose from a low of 14 per cent in the third week of March to 59 per cent in July, has declined to 45 per cent with further recession in prospect.

THIS loss of 25 per cent of activity in the past few weeks not only erases all of the gains in purchasing power of the 15 per cent general steel code wage rise, but reduces it below where it was when the Blue Eagle drive began.

SOMETHING is evidently the matter. We suspect that a first-class recovery is being talked to death.

IT is time that real action superseded talk. It is time that the doctors cease to experiment with a convalescing patient.

SOME day we may need the leadership of those who wish to reorganize society. But today our prime need is the kind of leadership which will get the wheels of the recovery engine started and keep them going after they are started. It is no time to reorganize the crew.

THE "rights" of labor are far less important than the right of the American people to deliverance from the depression.

SUCH deliverance can come only by the assertion of fearless and resolute leadership by our President—the type of leadership that will put a stop to selfish efforts to obtain private advantage out of a great national undertaking, the type of leadership that brought us out of the banking crisis, the type of leadership that will cut through the mountains of words piled up by visionaries and opportunists and arrive at practical, attainable objectives.

What Is an Alloy Steel?—Survey of O

By EDWIN F. CONE

IF metallurgists are asked to give a specific answer to the question—*What is an alloy steel?*—the results are surprisingly at variance. And if they are asked whether a given steel is in the alloy class, lack of agreement is equally pronounced.

Several of the technical societies have attempted to establish a definition, and committees have been appointed and questionnaires have been circulated. Thus far nothing definite has materialized.

AS a result of conversations with metallurgical friends, but not with the expectation that the matter could be settled, a canvass was made in the following manner:

To a selected number of metallurgical authorities, a letter was sent asking for a statement as to "just what constitutes an alloy steel" together with a definition of an alloy steel as distinguished from plain carbon steels. Accompanying this was a list of selected ranges of certain steels concerning which there has been, or is, some difference of opinion, with a request for a "Yes" or "No" reply as to whether they are in the alloy steel class. In the accompanying table giving the result of the replies, the steels selected are found.

The vanadium and molybdenum types were selected because, at one time at least, there were some who insisted that, unless these or similar elements were present in excess of 0.50 per cent, they could not be classed as alloy steels. There has always been a difference of opinion as to the high sulphur and phosphorus steels. The replies show that there is a unanimity of opinion as to the vanadium and molybdenum and similar low-content alloy steels, but that only a very few regard the high sulphur and phosphorus types in the alloy class.

The greatest difference of opinion prevails regarding the low-copper steels (0.20 to 0.25 per cent Cu) and the high sulphur and phosphorus types. Men whose opinion in the metallurgical world is highly regarded are among the few who do not regard the copper steels in the alloy class but do place the high sulphur and phosphorus in that class.

One metallurgist styles the low-copper (0.20 to 0.25 per cent) as well as the high sulphur and phosphorus steels as "special classes of carbon steel." Another opinion is to the effect that "we do not consider a high-sulphur or high-phosphorus steel as an alloy steel as these are metalloids and not true alloying elements. That is, they do not actually alloy themselves with the steel but remain in the steel as a foreign material in a non-metallic state." Another reply is that—"since sulphur and phosphorus are not metallic elements, and the word alloy connotes two or more metallic elements, some other term should be coined for these."

Another authority states that "in view of the fact that the high-sulphur or high-phosphorus steels are possibly for the intent of improving certain physical characteristics they might be considered as alloy steels." An interesting testimony runs as follows:

> "I should not call a steel containing the 0.10 to 0.15 per cent sulphur an alloy steel because the free-cutting properties are definitely mechanical ones and not metallurgical ones, in addition to which sulphur is one of the ordinary impurities included in my definition. If, as in Carpenter's case, an addition of selenium, or, as in some other cases, an addition of tellurium be made with the same object, I should certainly call the products alloy steels because neither tellurium nor selenium is a conventional constituent. To steels with phosphorus additions the same remarks apply as to sulphur.

The Medium Manganese Steels

Regarding the so-called "medium-manganese" steels I find the following remarks:

> I would not consider a steel with 1.00 to 1.25 per cent manganese as an alloy steel. Hundreds of thousands of tons of steel rails and other steel products have been made in the past, particularly, by the Bessemer process, containing regularly from 1.00 to 1.25 per cent manganese and were never considered as alloy steels. Incidentally, this rail steel contained usually 0.10 to 0.12 per cent sulphur. Rifle barrel steel with a manganese range up to 1.30 per cent manganese has never been considered as an alloy steel. I am inclined to the opinion that only steel containing in excess of 1.25 per cent manganese should be classed as a manganese alloy steel.

Manganese over 1.00 per cent certainly modifies the properties of plain carbon steel and would come under the alloy class, says another commentator, while another states that an enormous majority of steel producers would express the opinion that it (medium-manganese steel) belongs in the alloy class.

The Low-Copper Steels

A considerable variation of opinions is found regarding the copper steels. One reply is: "The question of copper is rather more involved, because copper is a very usual incidental impurity in steel, though it seldom exceeds 0.10 per cent. If copper were added with the definite metallurgical object of increasing corrosion resistance, I should be tempted to call even an 0.25 per cent copper steel an alloy steel but I admit that it is in the extreme border line."

From two prominent metallurgists comes the comment: "The reason why we would register our opinion as classifying it (0.20 to 0.25 per cent Cu) as a non-alloy steel is that that amount of copper may be introduced into steel through the use of scrap and it would seem that, practically, it would be undesirable to register as alloy steels such compositions as contain alloys in the unavoidable quantities resulting from the use of scrap in the manufacture of the steel. Thus, for example, although nickel steel is clearly an alloy steel, one would probably not classify an 0.25 per cent nickel steel as an alloy steel because of the fact that this amount of nickel may normally be contained in carbon steel coming from alloy mills."

From another reliable source comes this testimony: "As I do not believe that it has been definitely shown that 0.25 per cent copper results in a definite improvement in either physical or chemical properties, I should not list 0.25 per cent copper steels as alloy steels. With more than 0.50 per cent copper, I should list them as alloy steels." He adds this interesting comment: "Steels containing more than 0.06 per cent vanadium, or more than 0.10 per cent molybdenum, more than 1 per cent manganese, more than 0.30 per cent chromium, more than 0.50 per cent nickel, more than 0.20 per cent tungsten, more than 0.25 per

Opinions and Some Suggestions ▲ ▲ ▲

cent aluminum, more than 0.80 per cent silicon, and more than 0.20 per cent titanium would come in the category of alloy steels, in my opinion."

From these few excerpts, it is plain that it is difficult to secure unanimity as to whether certain steels are alloy steels. This is a demonstration of the need of definite clarification of the subject.

Varying Definitions of Alloy Steels

IT is not possible to analyze here all the various definitions which have been proffered. A few of them will be reproduced with some of the comments. One of the best and most definite is:

> An alloy steel may be considered as one that, through the addition of metallic elements other than those present in plain carbon steel, or by a very considerable increase in the metallic elements, silicon and manganese, commonly present in plain carbon steel, possesses a marked difference in physical characteristics, mechanical, electric, magnetic, etc., or resistance to atmospheric or chemical action, either at normal or elevated temperatures, from plain carbon steel.

This definition assumes that the elements in plain carbon steel are only the following: Carbon, manganese, silicon, sulphur and phosphorus. Under it, steel with 0.20 to 0.50 per cent copper might be classed as an alloy steel provided it can be considered as having a marked resistance to atmospheric action or corrosion. Free-cutting high-sulphur steels, this authority holds, can hardly be classed as alloy steels, and even now, plain carbon steels with equivalent sulphur are common general purpose steels and never considered as anything other than plain carbon steels. High-phosphorus sheet steel can hardly be considered as an alloy steel for the same reason, he adds.

"My own attitude in this matter," says a well known authority, "is that, strictly speaking, no definition of an alloy steel can be made because steel itself is an alloy of some five or six elements. Therefore it becomes a case only of defining or describing or setting some arbitrary limits for analyses which by common consent would not be considered 'ordinary steels.' In passing from an 'ordinary steel' to an 'alloy steel,' I believe we have to consider the question of intent. When the ordinary limits are raised to unusual amounts or even when elements not regularly present in commercial steels are added, then I believe we get into the field of alloy steels."

Vote of Metallurgical Authorities in Classifying Steels in Alloy Group and Otherwise

Type	Per Cent	Yes	No	Doubtful	No Vote
Copper	0.20 to 0.25 plus	12	5	2	5
Vanadium	0.15 to 0.20 plus	19	—	—	5
Molybdenum	0.20 to 0.50 plus	19	—	—	5
Manganese—					
(Medium manganese)	1.00 (or 1.25) to 1.75	18	1	—	5
High sulphur—					
(Free cutting)		4	14	—	6
High phosphorus—					
(For sheets)		4	14	—	6

A professor of metallurgy in a leading university offers this:

> Alloy steels are steels some of the distinctive properties of which are substantially altered by the presence of one or more elements other than carbon.

This authority, however, does not classify copper (0.20 to 0.25 per cent) or high-sulphur or high-phosphorus steels as alloy steels.

Other definitions briefly are as follows:

> Alloy steel is a deoxidized steel to which a substantial quantity of another metal has been added to modify its useful characteristics (Suggested minimums; 1.0 per cent for manganese, tungsten, aluminum; 0.50 per cent for silicon, nickel, chromium; 0.20 per cent for copper, molybdenum; 0.10 per cent for vanadium.

> Alloy steel is an alloy of iron and carbon containing at least 0.10 per cent silicon and also containing a sufficient amount of an additional element to produce an improvement in the physical or chemical properties of the article made of the steel.

> An alloy steel is one in which elements besides iron, carbon, sulphur and phosphorus are present in sufficient amount to make a marked difference in the physical properties of the metal.

> Alloy steels are steels to which one or more special elements have been added to modify the properties of ordinary carbon steels.

> Any steel is an alloy steel which contains any element intentionally added for the improvement of properties (except for the purpose of merely making the steel sound, such as the normal additions of manganese and silicon).

> Alloy steels are those to which the added elements are not put in for soundness but for a specific action in altering the properties and producing results over and above what can be gotten from a plain carbon steel.

> An alloy steel is a steel to which some alloying element has been added for the purpose of conferring some advantageous and appreciable change in one or more physical or chemical properties.

> It is difficult to conceive a definition for an alloy steel other than a steel carrying a sufficient amount of alloy so that the properties of the steel are noticeably affected by the alloy content—the word "properties" referring to any physical characteristic of the steel which may be affected.

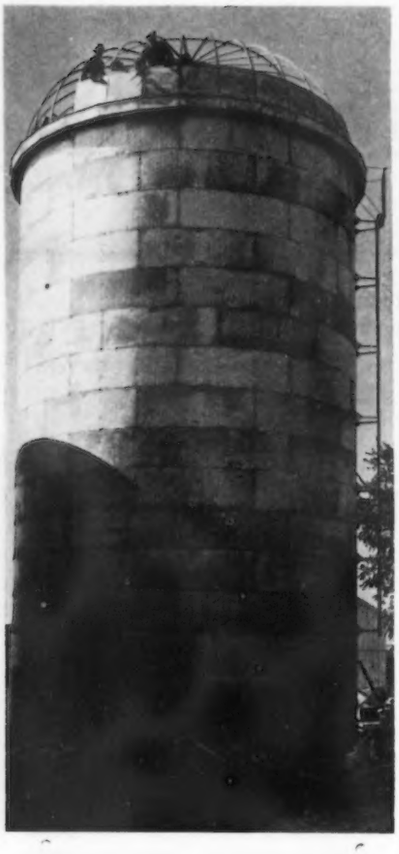
Interesting comment from another metallurgist is to the effect that:

> Copper, vanadium, or molybdenum present to the extent of 0.15 per cent or more, manganese of 1.00 per cent or more; phosphorus of 0.06 per cent or more; sulphur of 0.06 per cent or more; nickel, tungsten, and/or chromium of 0.25 per cent or more would either singly or in combination with each other so affect the properties of a steel as to make it classable as an alloy steel. It immediately becomes clear, therefore, that any of the alloy ingredients, present individually above the amounts given, would class a steel as an alloy steel. If, however, a number of these elements present were present in quantities slightly less than the percentages given above, they could easily enough have a combined effect equivalent to some one element present in quantities more than the percentage indicated above, and therefore again such a steel would be classable as an alloy steel.

Further brief comments of some of the authors of the definitions reproduced are as follows:

"For the purpose of duty the tariff laws set arbitrary limits beyond which

(*Concluded on Page* 70)



THIS alloy iron structure (at left) is prefabricated and its erection in the field is a matter of ordinary tools and a class of labor that is readily available.

These steel barns are designed without a hay mow thereby reducin

Steel Can Save Farmers $3

AFTER nearly a quarter of a century of experience in meeting the needs of farms, the James Mfg. Co., Fort Atkinson, Wis., started in a serious way the development of steel farm structures. Experiments, now completed, have been under way for several years so that now this company is offering a complete line of steel farm structures.

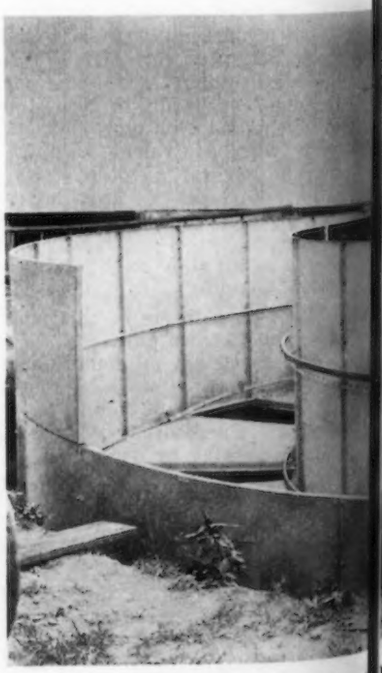
It engineers and sells the structures. The Republic Steel Corpn. furnishes the metal and fabricates it in an Ohio plant according to the James' blue prints. The decision to fabricate farm structures in Ohio rather than in Wisconsin was reached because it was believed uneconomical to haul steel to Wisconsin and then back haul the fabricated parts to the most densely populated part of the country which lies east of the Mississippi River. Ohio is well located with respect to the center of population and because the metal is produced in Ohio its fabrication at the steel mill's doorstep appears logical.

The metal used is an iron alloy which has been specially developed by Republic in accordance with the practical experience gained by James in meeting the farmers' needs. All structural members, tubing and sheets are made from this iron. Galvanizing is used where experience dictates.

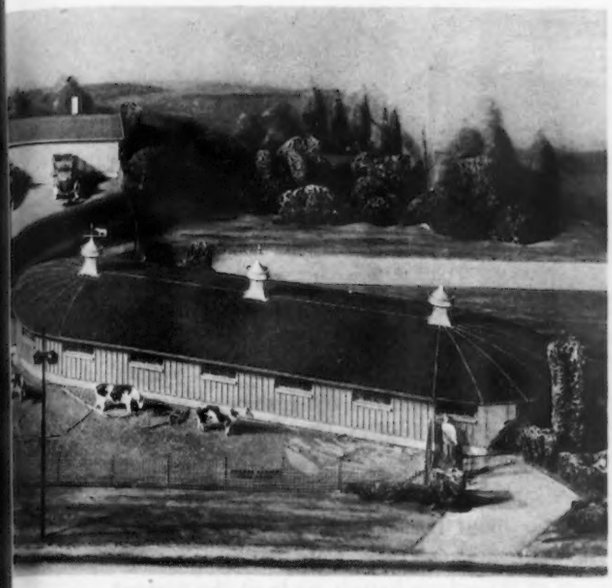
The United States Department of Agriculture estimates that the value of all farm structures and their contents is about $23,000,000,000. The buildings alone are worth $11,000,000,000. There are 37,000,000 buildings of all kinds on the 6,000,000 farms in this country. Annual replacement calls for 150,000 barns, 188,640 poultry houses, 62,880 hog houses, 50,300 milk houses, 37,720 implement sheds, 25,140 silos, 86,020 corn cribs and 138,336 dwellings. The lumber tonnage for a year's replacement is 3,284,192. All of these structures can be made of steel.

Requirements for a steel structure that is to be erected on a farm are, first that it must give better and longer service than the farmer has had from other designs and materials. Its cost must be comparable to that of replacing the old structure with one of the same general design and materials. Finally the fabricated parts must be such as to be easily and economically erected by the average class of labor available in farm areas.

The James company called in a designer who understands framework design for Zeppelins. No single fabricated steel part is heavier than a stick of lumber that would ordinarily go into a similar frame structure. For instance, roof trusses and columns for a steel barn are built of light weight channel sections and the chords are made of square bars bent to the proper angles at the ends and welded to the channels. Wooden strips, treated to resist fire, are bolted between the channel legs to be used as nailing strips for attachment of insulating materials and steel sheath-



General details of design of the structure

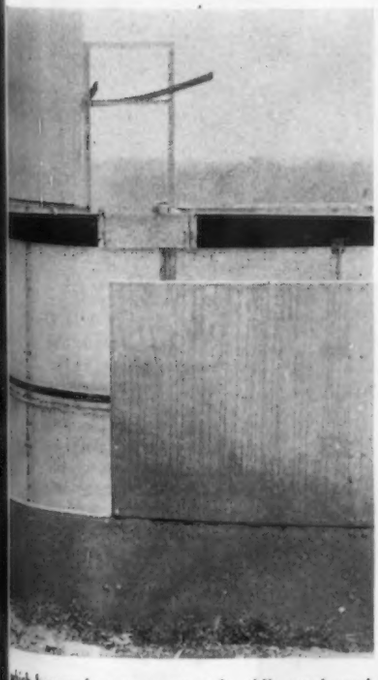


fire hazard to the minimum and making them more wind resistant.

THE inner and outer shells (at right) of the "kutcrop keeper" in place. Hay is stored in the ventilated section formed by the two shells which are attached to the channel rings.

$300,000,000 a Year

By ROGERS FISKE
Western Editor, THE IRON AGE



which hay and corn are stored. All metal used is iron alloy.

ing. A typical design consists of a steel frame insulated inside and outside. Metal sheathing covers the inside and outside of the walls and the ceiling. The roof may be of a composition material. Mastic seals all joints not otherwise tight.

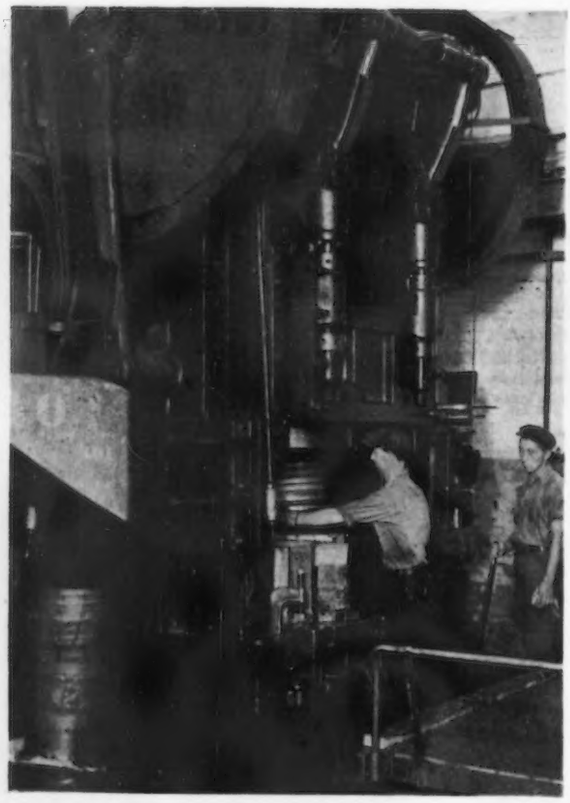
Wind-Resistant Structures

The question can be raised as to the effectiveness of light member steel framing in high winds. These structures have been tested for pressure resulting from a wind velocity of 90 mi. per hr. Further, it has been definitely demonstrated that the high barn structure which provides a large hay loft need not be used. The steel cattle barn need be only a low structure that will provide workable head room space within. There is another way of handling hay storage. Therefore, what danger may result from spontaneous combustion is completely removed from the barn and the cattle. The latter in many cases have resulted from special breeding over a long period of time and if lost cannot be replaced at any cost.

The patented steel structure used for hay storage is built in the general form of a cylindrical silo. Circular channels, fitted with nailing strips, are bolted to flanged galvanized sheets which form the shell. The sheet flanges are bolted together and the joints filled with mastic. The structure consists actually of four shells, telescoped together. The inner shell is built up solidly of flanged sheets and in it is stored corn. The next shell, also made of sheets, is spaced a few inches from the inner shell in order to provide an air space. This second shell is formed to provide a series of openings for ventilation of the hay. The third shell is like the second but is nailed to nailing-strip channels that are supported by the outer flanged sheet steel shell. Hay is stored in the ventilated space between the second and third shells. Silos, using similar construction, may be built without providing the space for storing hay.

Viewing this entire development it is at once appreciated that all these steel farm structures are actually designed units and may be so assembled as to give structures of almost any size and arrangement desired.

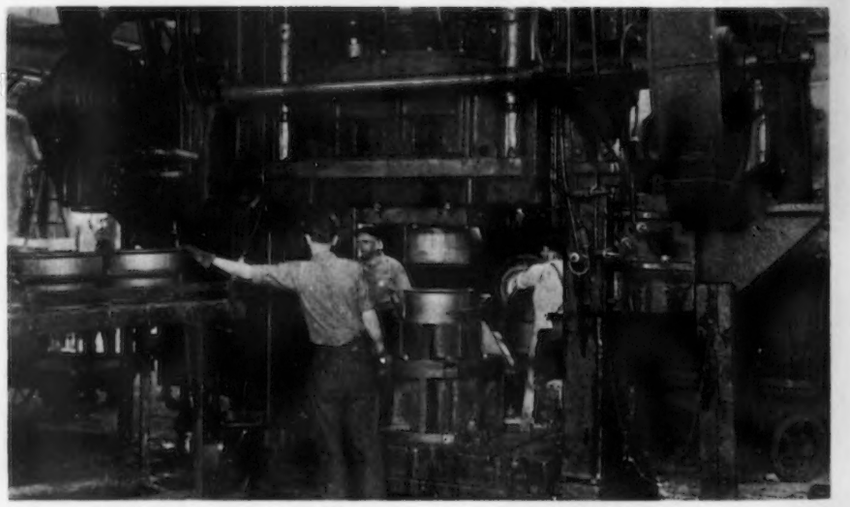
Steel construction is the logical answer to the following farm losses that occur each year to construction of the older designs and materials. Origin of blaze unknown, $70,000,000; spontaneous ignition, $30,000,000; lightning, $12,000,000; wind storm, $40,000,000, and deterioration, $240,000,000. Further, it opens a new market for the products of steel mills which should add many tons annually to order books.



Beer Boosting Steel Barrel Business

AFTER months of research the Murray Corpn. of America, Detroit, recently began the manufacture of an insulated steel beer barrel the external appearance of which is like the old-fashioned wooden barrel. Production increased rapidly and today stands at 5000 barrels a day. This new activity, resulting from the revival of the brewing industry, is providing employment for about 1000 men and requires approximately 180 tons of sheet steel daily. It is estimated that two out of three beer barrels made at the present time are of steel, whereas in pre-prohibition days all barrels were constructed of wood. The Murray barrel, weighing 60 lb., is 20 per cent lighter than a wooden barrel.

RUNNERS formed (above) in the surface of the outer shell fit standard conveyor systems, protect the bung from damage in handling and reinforce the barrel sides against rough handling. The formation of the runner, or "bead," an expanding operation, is shown in this photograph.

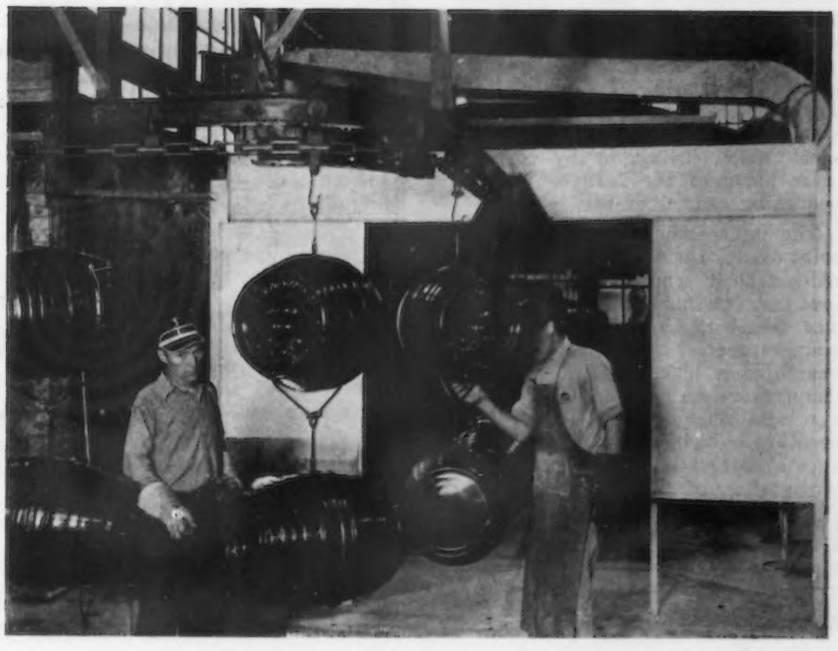


THE barrel (at right) consists of an inner and an outer shell of 14-gage sheet steel with insulating material in the dead air spaces between the shells. The insulation insures the maintenance of beer at the proper temperature in winter or summer, the same as in a wooden barrel. The steel shells are stamped in large presses, the photograph showing the second drawing operation in the fabrication of the outer shell. This operation is performed on a 450-ton double-action toggle press requiring skilled operators.

WELDING (at left) in the bung plates. The bung is adapted to standard cleaning, filling and pitching equipment. During its manufacture the barrel goes through a number of welding operations which give it added strength. For the welding work the Murray Corpn. has installed a large amount of new welding equipment of the latest type.

ASSEMBLY (above) of the outer and inner shells (inner shells are shown on the floor). The inner shell is formed from two half sections of steel welded together. The smooth inner surface of the barrel with well-rounded corners insures cleanliness.

THE exterior and interior of barrels (above) are rust-proofed by being Bonderized. This process is said not only to prevent rusting, but also to make the inner surface of the barrel porous so that pitch will adhere tightly to it.



BARRELS pass through a spray booth (at right) on an overhead conveyor and receive a coat of enamel. They then are carried through an overhead baking oven in which the enamel is well baked on the surface of the barrels.

Regenerator Chambers for Furnaces

THE second feature in the design of natural gas-fired open-hearth furnaces that requires special attention is the regenerative chambers.

The object of the regenerators on an open-hearth furnace is to preheat the air for combustion. A higher preheat will result in a higher flame temperature, faster working furnace, and lower fuel consumption per ton of steel produced. Therefore, in designing furnaces or converting furnaces for the use of natural gas, any improvement that will increase the temperature of preheat should be given careful consideration. The factors that affect the temperature of preheat in an open-hearth are as follows: 1. Temperature of the products of combustion; 2. Design of regenerative chambers and checker work; 3. Amount of air preheated.

Temperature of Products of Combustion

In a fast working furnace the waste gases leave the hearth at a temperature of 3000 deg. F. The sensible heat in these gases at this point is equal to 65 per cent of the total heat input into the furnace, and it is desirable that these gases be conducted through the downtakes and slag pocket to the regenerator with as small a loss in temperature as possible. The heat loss along this path is due to radiation and infiltration of cold air. The loss due to radiation may be reduced by insulating the slag pockets and regenerator chambers. The loss due to the infiltration of cold air may be eliminated by encasing the port ends, downtakes, slag pockets, and regenerators of the furnace in an insulated sheet steel casing, or by covering these parts of the furnace with an insulating cement or tar.

The infiltration of cold air at this point dilutes the waste gases and this reduces their temperature. In a recent test (*) this drop in temperature was found to be 400 deg. F. The temperature of waste gases at the hearth was 3000 deg. F, and the temperature at entrance of regenerator was 2600 deg. F. If this temperature were increased it would produce a corresponding increase in the temperature of the preheated air.

It may seem like going to a lot of expense to encase parts of the furnace in steel plates, but it should be remembered that an open-hearth furnace cannot be made permanently tight by the application of slurries on the brick work alone. Therefore, if the heat loss by radiation is reduced and the infiltration of cold air is prevented, the waste gases from the hearth of the furnace will reach the checker-brick with the minimum loss in temperature. This is the first stop toward the efficient operation of regenerators.

The design of any regenerator chamber is a compromise between that which will produce the maximum heat transfer, and that which will remain open to the passage of gas throughout the campaign of the furnace. For example, very small staggered openings between the checker-brick will produce the maximum heat transfer between the waste gases and the air, but these small openings would be quickly clogged up by the particles of slag brought down from the bath with the products of combustion.

The principal constituents of this deposit on the checkers are limestone, cinder, and silica. There is a certain

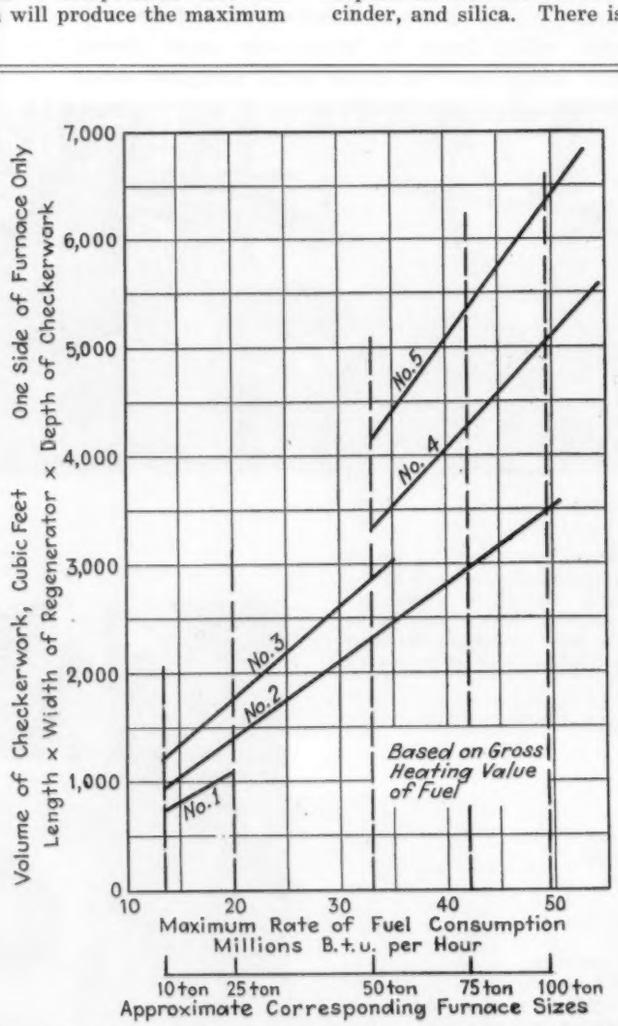


Fig. 2—For a given tonnage rating of a furnace, the curves show the volume of checker work required for specific flues and brick sizes, as follows:

Curve number	1	2	3	4	5
Flue size, in. sq.	3½	4½	4½	6	6
Brick thickness, in.	2½	2½	2½	4½	4½
Air velocity, ft./sec.	5	5	2½	5	2½

* "Thermal Study of an Open-Hearth Furnace," by William Henry.

...ces Using Natural Gas ▲ ▲ ▲

By H. J. WILLIAMS
Industrial Gas Engineer
Equitable Gas Co., Pittsburgh

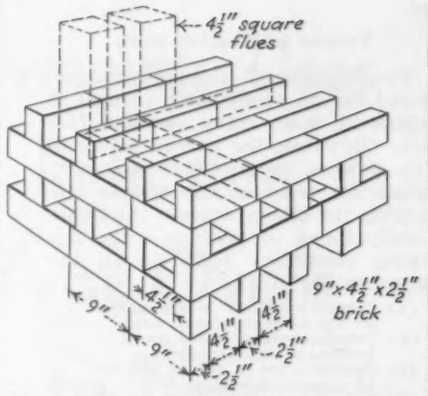


Fig. 1—This sketch of checker work, built of 2½ in. thickness brick to form 4½ in. sq. flues, is typical of the most popular method of laying the brick.

amount of this deposit produced by non-combustibles in the fuels. Since natural gas is a clean fuel and does not produce any ash, the checkers on a natural gas-fired furnace remain open longer, thus increasing the number of heats to the campaign. Furthermore, the volume of the products of combustion are less on a natural gas-fired furnace, which results in the gases carrying over less dirt from the hearth.

These facts, along with the installation of pusher fans for supplying air, have enabled the designer of natural gas-fired furnaces to reduce the size of the openings between the checker-brick, thus increasing heat transfer and reducing the fuel consumption per ton of steel produced.

In the past it has been the custom to compare regenerators on the basis of cubic feet of brick per ton of furnace capacity, or pounds of brick per ton alone. These figures varied over wide ranges, one survey showing a range of 40 to 130 cu. ft. brick work per ton of furnace capacity. When comparisons are made on this basis alone, they are very misleading because they fail to take into consideration the efficiency of utilization of the checker-brick. The following factors must all be considered when comparing and designing checker-work:

1. Method of laying brick; 2. size and type of brick; 3. size of vertical flues; 4. volume of checker-work.

Laying Regenerator Bricks

Checker-brick should be laid so the gas and air passages are vertical. The waste gas should pass downward through the checker-work and the air being heated should pass upward. There is less channeling with this type of construction than there is with a checker arrangement having horizontal flues.

There are three common methods of laying checker-brick with vertical flues. They are, namely, solid chimney checkers, standard checkers, and checkers with variable cross section of flue. It does not seem to make much difference which of these arrangements is used as far as heat transfer is concerned. However, the standard method, Fig. 1, is most popular as it produces solid checker-work with a minimum amount of brick.

Size and Type of Brick

In the past the most popular sized brick was 10½ x 4½ x 4½ in., and this brick is still used more than any other size. However, there is a trend at the present time toward thinner checker-brick, such sizes as 9 x 4½ x 2½ in., 13 x 4½ x 2½ in., or 13 x 6 x 3 in. This trend is especially noticeable on the small and medium sized open-hearths.

This change is taking place because the rate of heat transfer within a brick is so slow that any part of the brick more than 1¼ in. from the surfaces has practically no value for the storage of heat during a 15-min. cycle. In other words, the thinner the checker-brick the higher its heat storage capacity as compared to the volume it occupies, and the greater will be the amount of heating surface for a given weight of brickwork.

However, the 4½ in. brick should still be used on large furnaces because the period between reversals is longer, and the volume of the regenerator is so large that large brick are necessary to increase the strength and insure the stability of the checker-work.

There is also a trend at the present time toward the use of high-alumina or silica brick for the top courses of the regenerator. These brick are more refractory than ordinary fire brick and consequently they should, to a greater degree, withstand the high temperatures at the top of the regenerator and increase the life of the checker-work.

Vertical Flues in Checker Work

The area of the vertical flues should be made as small as possible in order to secure the maximum heat transfer, and large enough to prevent clogging. These flues were usually about 6 in. square, but they are now being reduced on many natural gas-fired basic furnaces to 4½ in. square, and on some gas-fired acid furnaces to 3½ in. square. The heating surface of a regenerator may be increased 80 per cent by replacing 4½ x 4½ in. brick with 2½ x 4½ in. brick and reducing the flues from 6 in. square to 4½ in. square. The total area of all the flues in a regenerator should be sufficient to permit the flow of the air required for combustion at the velocities permissible in the regenerator.

On regenerators using natural draft, the velocity of the air through the regenerator should be 2 to 3 ft. per sec. If the furnace is equipped with a fan for forcing the air into the regenerator, the velocity through the

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HOW to calculate the sizes of regenerators for open-hearth furnaces using natural gas is the central feature of this article, which is the third of a series devoted to points of design peculiar to the natural gas application. The author takes occasion incidentally to urge special precautions to minimize air infiltration, as by the use of steel jacketing. The first article covering the broad economics of the general subject appeared Aug. 24; the second, focusing on ports, was published Aug. 31. The next instalment will take up combustion control.

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checker-work may be 5 to 10 ft. per sec.

Volume of Checker-work

The volume of checker-work required for an open-hearth furnace is dependent upon many variable factors. However, the curves shown in Fig. 2 were developed by assuming values for some of the factors and varying the others between the limits usually found in practice. The following conditions apply to all the curves in Fig. 2.

(a) Temperature of waste gases at top of regenerator, deg. F. 2600
(b) Temperature of waste gases at bottom of regenerator, deg. F. 1325
(c) Temperature of air at bottom of regenerator, deg. F..... 500
(d) Temperature of air at top of regenerator, deg. F..... 2000
(e) 15 min. reversals.
(f) Standard arrangement of checker brick, Fig. 1.
(g) 5 per cent excess air.
(h) No infiltration of cold air.

The ordinate of the graph gives the volume of checker-work on one side of the furnace only, which is the length by the width of the regenerator by the depth of the checker-brick. The abscissa gives the maximum rate of fuel consumption, with a supplementary scale showing the approximate corresponding furnace sizes.

Curve No. 1 is based on 3½ in. square flues, which are recommended for small acid furnaces fired by natural gas. A blower should be used to secure the air velocity mentioned.

Curve No. 2 is based on 4½ in. square flues. This arrangement of checkers has been tried on a number of acid and basic furnaces and has been found entirely satisfactory. It is to be recommended for all except large furnaces where thicker brick are needed because of their strength and stability.

Curve No. 3 is based on 4½ in. square flues, 2½ in. brick thickness, and 2½ ft. per sec. average air velocity. This air velocity is that usually reached when operating the furnace by natural draft.

Curves Nos. 4 and 5 are based on 6 in. square flues. This is the most common checker arrangement in large steel mill furnaces.

The average velocity of air through the checker work was taken at 2½ ft. per sec. for natural draft and 5 ft. per sec. for furnaces equipped with a pusher fan for blowing air into the furnace. An average air temperature of 1250 deg. F. was used in calculating the above air velocities.

It is important to recognize the relationship that exists between the volume of checker-work, velocity of flow, and depth of checkers. The free area in the regenerator is determined by the velocity of flow desired. The ratios of flue area to total cross-sectional area are as follows:

	Ratios of Flue Areas
3½ in. sq. flues, 2½ in. brick thickness,	34.0 per cent
4½ in. sq. flues, 2½ in. brick thickness	41.4 per cent
6 in. sq. flues, 4½ in. brick thickness,	32.7 per cent

The volume of checker-work divided by the cross-sectional area of the regenerator gives the depth of checkers required. This calculation is illustrated by the following example:

Consider a furnace of approximately 50 tons capacity, with a maximum rate of fuel consumption of 33,000,000 B.t.u. per hour; standard checker work, 4½ in. square flues, 13 x 4½ x 2½ in. brick. Fuel is natural gas with a gross heat content of 1130 B.t.u. cu. ft. (a) Equipped with a blower; (b) natural draft. To determine depth of checker-work and number of brick required:

33,000,000 ÷ 1130 = 29,200 cu. ft./hr. maximum rate gas consumption
29,200 ÷ 3600 = 8.1 cu. ft./sec. maximum rate gas consumption

Since 1 cu. ft. gas requires 10.7 cu. ft. air for perfect combustion, and we are allowing for 5 per cent excess air:
Air required on a 60 deg. F. basis =
8.1 x 10.7 x 1.05 = 91 cu. ft./sec.

Air required at the average air temperature of 1250 deg. F. =

$$91 \times \frac{1250 + 460}{60 + 460} = 300 \text{ cu. ft./sec.}$$

(a) If the furnace is equipped with a blower:

Flue area required = 300 ÷ 5 (ft./sec.) = 60 sq. ft.

Since for 4½ in. flues and 2½ in. brick the ratio of flue area to total area is 0.414, the total cross-sectional area of the regenerator = 60 = 0.414 = 145 sq. ft.

Referring to Fig. 2, curve No. 2, the volume of checker-work required for the furnace is 2260 cu. ft.

∴ 2260 ÷ 145 = 15.6 ft. depth of checkers required.

(b) If the furnace is operated by natural draft:

Flue area required = 300 ÷ 2½ (ft./sec.) = 120 sq. ft.

Total cross-sectional area of the regenerator = 120 ÷ 0.414 = 290 sq. ft.

Referring to Fig. 2, curve No. 3, the volume of the checker-work required for the furnace is 2900 cu. ft.

∴ 2900 ÷ 290 = 10 ft. depth of checkers required.

The number of brick required can be determined from the following table which gives the number of brick per cubic foot volume of checker-work.

3½ in. sq. flues, 9 x 4½ x 2½-in. brick .....7.1 brick/cu. ft.
4½ in. sq. flues, 9 x 4½ x 2½-in. brick .....6.1 brick/cu. ft.
6 in. sq. flues, 10 x 4½ x 4½-in. brick .....3.5 brick/cu. ft.

In part (a) of the preceding example, the volume of checker work was 2260 cu. ft. Therefore, one regenerator will require 2260 x 6.1 = 13,800 checker-brick.

In part (b) one regenerator will require 2900 x 6.1 = 17,700 brick.

The curves shown in Fig. 2 are based on the heating surface required for heat transfer. The theory underlying this method of designing regenerators is found in Trinks "Industrial Furnaces," Vol. I, pages 152-169.

In practice it is often necessary to increase the heating capacity of a regenerator either because the size of heats has been increased, or a higher degree of preheat is desired. There are a number of ways in which this problem can be handled. They are:

1. Thinner checker-brick and smaller flue openings may be installed.
2. The checker-work may be made deeper.
3. In case the regenerator cannot be made deeper because of reaching the water level or for some other reason, a two-pass regenerator may be built. In building a two-pass regenerator the waste gases should flow downward in both passes.
4. Checker-brick may be placed in the flue between the regenerator and the reversing valve. This would result in having horizontal flues in this section of the regenerator.

As all the above methods of increasing the heating capacity of the regenerator involve increasing the draft loss through the regenerator, it probably will be advisable to install a fan on the furnace for forcing air into the regenerator under pressure.

Amount of Air Preheated

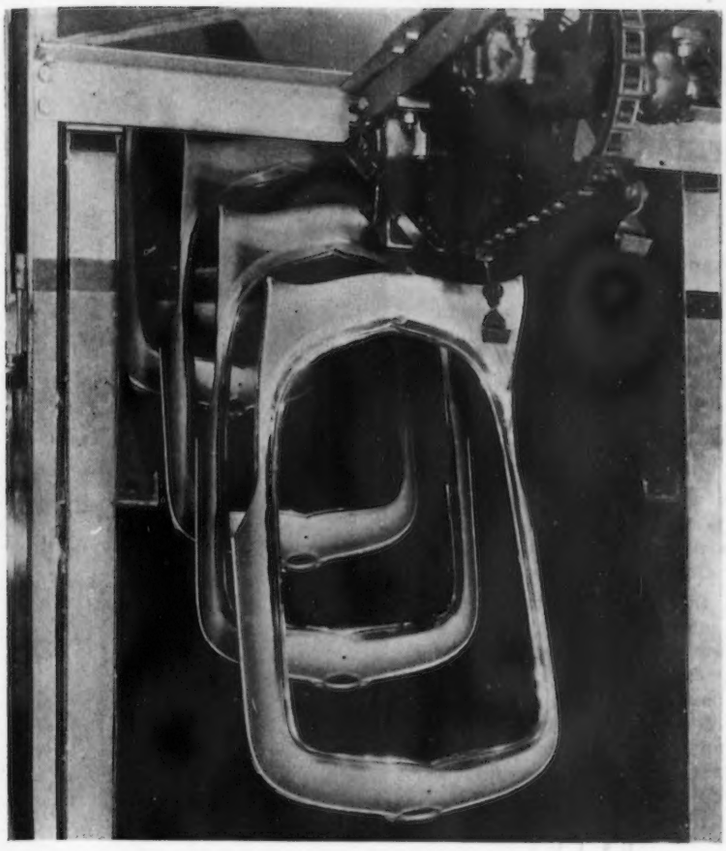
In this article we have already mentioned the importance of bringing the waste gases to the regenerator with the minimum heat loss and we have also brought out the importance of proper regenerator design. In order to secure the maximum temperature of preheated air it is necessary to make sure that all the air necessary for combustion is going through the regenerators and being preheated. An idea of the magnitude of the infiltration of cold air into the furnace may be secured by again referring to Mr. Henry's article "Thermal Study of an Open-Hearth Furnace." Mr. Henry found that only 58 per cent of the air required for combustion passed through the incoming generator, while there was 9.9 per cent excess air in the waste gases entering the regenerator, and 22.5 per cent excess air in the waste gases leaving the regenerator. This test illustrates the large infiltration of cold air occurring in open-hearth furnaces.

Preventing Infiltration of Cold Air

This infiltration of cold air into the preheated air can be prevented by making the brick work of the furnace as tight as possible. Enclosing the regenerators and passages in steel plate or insulating cement, and installing a pusher fan on the furnace in order to maintain a pressure on the incoming side and hearth at all times is also very essential.

This problem is similar to the one mentioned in the first part of the article. In that case the cold air was diluting and cooling the products of combustion; in this case the cold air is diluting and cooling the preheated air. Reduce the infiltration of cold air and both problems are partially solved.

Other reasons for installing a blower on an open-hearth furnace will be discussed in the next article of this series under the title "Open-Hearth Combustion Control."



Plymouth radiator shells, on conveyor chain, entering the new induction type enameling oven.

Plymouth Uses Induction Type Ovens to Bake Enamel on Steel Parts

By E. L. BAILEY
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THE time required for baking enamel on radiator shells has been reduced 30 to 50 per cent and the quality of the finish improved at the plant of the Plymouth Motor Corpn., Detroit, division of the Chrysler Corpn., by the installation of induction type ovens. The maintenance expense for these ovens is surprisingly small, for there is little if any deterioration of equipment and materials.

The principle used is to pass enameled steel parts which are to be baked through the center of a series of electrically charged wire coils. The secondary current passes through the radiator shell and thus the enamel is baked on at an even temperature. Since the paint is dried from the inside to the outside, it leaves a firm, dense film free from holes or wrinkles.

Of the modified "A" type which makes an air seal, greatly improving the thermal efficiency and the working conditions at either end, the ovens consist of the conventional tunnel of insulated wall material with an overhead chain conveyor running through it carrying the load. The conveyor chain is of bronze and the rails of aluminum. Two kinds of side walls are used; one oven has hollow metal panels packed with insulation and the other is constructed of fibre board. They give equally good service.

Inductor coils consist of No. 1 copper wire wound in as a solenoid through which the load hanging on the conveyor must pass. Coils are not continuous throughout the oven, but are broken up to make use of a three-phase connection and to produce the greatest heat at the end of the oven where the work enters. Being of large section copper, the coils themselves generate little heat. They are supported by ordinary insulators in much the same manner that open wire work is handled. A thin wall inside the coils protects them from mechanical damage in case material on a conveyor hook should come loose. The bottom of the oven has a smooth finished surface.

Heating of the steel parts going through the oven is not by radiation from the coils across a large air space, but by the effect of the magnetic field produced by the coils flowing in the parts. The parts thus are dried by heat generated in themselves. The temperature rises rapidly to that required for baking, after which the part passes into a weaker field where the power input to the part balances the radiation and holds the temperature constant. The result is that the parts are maintained at a temperature 75 to 80 deg. hotter than the air surrounding them, with only a small power input, thereby accomplishing a major economy.

HEAT, originating in the metal sheet and passing outward through its coating of enamel, frees the surface from holes or wrinkles and cuts enameling time. This reversal of the customary application of heat from without is made possible by the use of induction type ovens.

The walls of the ovens carry off only a small amount of heat, as the difference in temperature between the air inside and outside the ovens is not nearly so great as with ordinary hot air circulation methods of heating. The air discharged from the ovens is of low velocity. The discharge point is at the top center, consequently there is no leakage of fumes or heat from the ends of the ovens where the operators stand.

The speed of the conveyor and the power voltage are variable over wide limits, giving a sufficient flexibility to take care of changing production conditions. Power, at 360 cycles, three-phase, 250 volts, is furnished by a motor generator set. The power factor of the ovens is low and correction is made by means of static condensers.

When the volume of work being carried through the ovens is light, the amount of electric power used is

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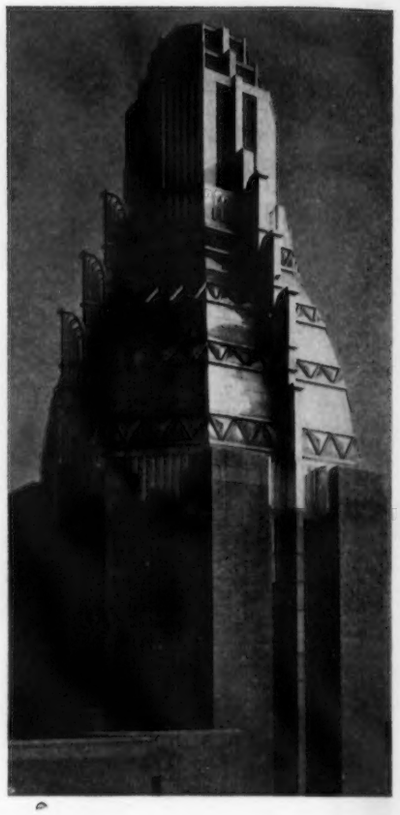
Reaction With Paint Destroys Metal Coating on Waldorf-Astoria Tower



MANY reports have been circulated regarding the cause of the discolorations on the eastern of the two towers surmounting the new Waldorf-Astoria Hotel in New York. It has been widely stated that the towers are sheathed with stainless steel and that the material in one of them proved defective and has deteriorated, probably because of its being exposed in inaccessible locations, where it cannot be wiped off at intervals. This impression has been strengthened because a prominent metallurgist of a company producing stainless steel once made the statement before a technical society that such steel would tarnish and rust, due to the soot, dirt and sulphur gases in a city's atmosphere, unless "its face could be washed now and then." It has also been reported that, being of stainless steel, the tower on the eastern, or ocean, side had rusted because of the effect of trade winds. All such reports are without foundation.

The two towers, one of which is shown in the accompanying illustration, are made of copper. The original intention, according to the architects, was to treat them with acids in order to give them the green coating, or patina, which in time results from exposure to the weather. Instead, it was decided to cover them with aluminum. This was done by two different processes. The copper of the western tower was first painted with a gray paint over which the aluminum foil or sheets were placed. The eastern tower was painted with red lead on which the aluminum was also placed.

In time the reaction between the lead paint and the aluminum on the eastern tower gradually destroyed the aluminum, exposing the red paint. Thus this tower is gradually losing its dress of aluminum with the resulting appearance of rust. The western tower seems to remain as originally treated.

Welding of Locomotive Frames

WHILE welding of locomotive frames is fairly well standardized, new problems calling for modified technique are continually arising. One of these problems was recently encountered by an Eastern railroad in the repair of a 6 x 6 locomotive frame pedestal jaw. The section at the break had already been welded and had broken at or near the weld. The supervisor decided that the metal adjacent to the break was in a fatigued condition and required removal. Therefore the pedestal was cut away and a forged filler piece was prepared to fill the gap. This was joined by a double oxy-acetylene weld and the entire section was then built up to give added strength. The total cross-section of the repaired pedestal was approximately 6½ x 7½ as against the original 6 x 6. Fig. 1 shows two operators at work simultaneously completing the weld and building up the section. Fig. 2 shows one operator putting finishing touches on the completed job. The total welding time was 10½ hr. and consumption of gas was 3300 cu. ft. of oxygen and 3000 cu. ft. of acetylene; 125 lb. of vanadium steel welding rod was used. The welding apparatus was made by the Air Reduction Sales Co., New York.

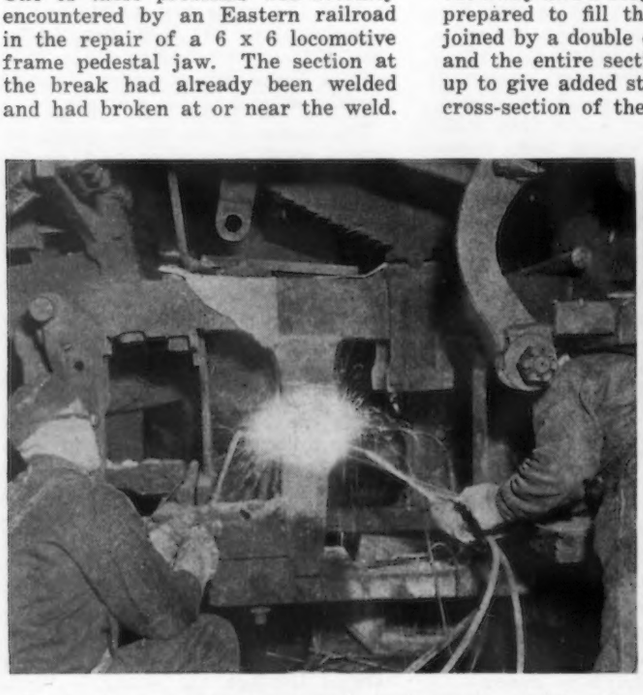


Fig. 1—Shows two operators at work simultaneously completing the weld and building up the section

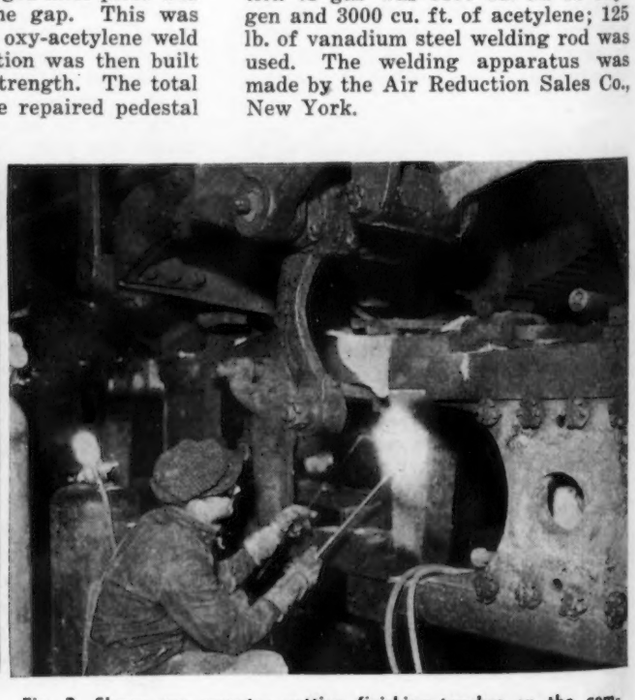
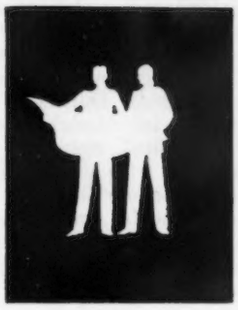


Fig. 2—Shows one operator putting finishing touches on the completed job



Welding Technique for Nickel and Nickel-Rich Alloys

WELDING nickel and nickel alloys was discussed at length by Herbert Herrmann in the Metallurgist Supplement of *The Engineer*, of London, April 28. This contribution in large part was as follows:

Pure Acetylene Gas Essential

As commercial acetylene frequently contains sulphur, pure gas must be expressly specified. It does not suffice to employ "practically" pure gas. Only absolutely sulphur-free acetylene should be used in the welding of nickel and its alloys, since even traces of sulphur (as low as 0.005 per cent) will render the weld brittle. The same applies to all the other welding materials employed, including welding rods and fluxes, which, besides protecting the fused weld metal against injurious outside influences, must assist the elimination of absorbed gases, and the injurious compounds formed, from the liquid metal by raising its fluidity and widening the freezing range and by decomposing the undesirable compounds already formed.

In view of the absorbing power of fused nickel for reducing gases, on the one hand, and for oxygen, on the other, the oxy-acetylene flame must be controlled with more than usual care, the most desirable being a slightly reducing flame with only a slight feather (approximately ⅛ in. long) beyond the tip of the luminous cone. A slightly higher degree of reduction will immediately become evident by increasing the porosity of the weld, while an oxidizing, or even neutral, flame may cause excessive oxidation of the melt.

Another important consideration in this connection is the size of the flame; that is to say, the proper size of the burner tip. If the flame is too small, melting of the nickel proceeds too slowly, the maximum heat range of the burner covers too small an area, and the fused metal solidifies too rapidly. In these circumstances the gases absorbed are not afforded sufficient time to escape, remaining in the metal and giving rise to porous welds. If, on the other hand, the burner tip is too large, the excessive heat will cause boiling of the weld metal, or even burning through at the seams.

It is impossible here to give exact figures for the proper size of the welding flame, which is largely determined by the character of the weld and by the shape and size of the parts to be welded. A safe rule for the nickel welder is to employ a flame as large as is possible without causing boiling of the weld metal.

Oxidizing Materials in Welding Rods

Welding rods or welding wire used for this purpose consist of nickel (or nickel alloys respectively) containing manganese, magnesium, aluminum, or other deoxidizing agents, manganese being the addition usually preferred. Much, however, depends upon the percentage of the deoxidizing agents added. In the case of manganese, 0.1 to 0.3 per cent may be considered the safe range, the exact percentage depending upon the material welded and the amount of manganese contained in the basic material.

Many of the nickel products sold in the form of sheets, tubes, etc., contain small percentages of manganese in order to improve their welding quality, and it is obvious that for material of this type the manganese content of the welding rods should be maintained proportionately low. The customary manganese content of nickel parts of welding quality ranges about 0.2 per cent and for material of this type the welding rod should contain not more than about 0.1 per cent of manganese. An excess of manganese is not desirable, although the disadvantages possibly accruing from this source are not nearly so serious as a lack of deoxidizing agent in the welding rod material.

Some authorities advise an addition of a small percentage of magnesium besides manganese in order to decompose possible sulphides in the weld. Experiments with alloys of this type have not always proved successful, although there appears to be no reason why this should be the case. It is true that manganese, if present in sufficiently large percentages, will also decompose nickel sulphide, forming manganese sulphide which enters the slag produced by the fluxing material. The amount required for this purpose, however, represents an undesirable excess, so that another reagent possessing a higher affinity for sulphur appears to be desirable.

There is no doubt that the failures obtained with nickel-manganese rods containing magnesium are due to excessive magnesium content, which, after decomposing the traces of sulphur in the melt, leaves sufficient magnesium in the weld to produce undesirable alloying conditions. It should be expressly stated, for this reason, that such an excess is formed even by very small additions of magnesium to the welding rod material, if this is additional to the required manganese content. Where magnesium is added, this should be deducted from the manganese. For instance, where ordinarily the manganese content of a welding rod is found to be, say, 0.25 per cent and an average sulphide content of, say, 0.01 per cent in the weld metal requires the addition of 0.05 per cent of magnesium, the welding rod metal should contain not more than perhaps 0.22 per cent manganese and 0.05 per cent magnesium. This point is not so unimportant as it may seem, in view of the small quantities involved, but since producers are not as a rule particularly careful in adding magnesium to special welding rod material containing manganese, the disappointing results sometimes obtained with these rods are easily explained.

Common Borax Not Desirable Flux

The fluxes employed for nickel welding should be protective as well as curative in character, the latter property including a pronounced solvent action on the sulphides and oxides of nickel. Common borax, the universal flux, although frequently employed for this purpose, is not to be recommended. If present in sufficiently large quantities it improves the fluidity of the weld metal but does not possess sufficient oxidizing power for the injurious nickel compounds present to counteract the embrittling tendencies of the welding process. Besides increasing the fluidity of the melt to a maximum, nickel welding fluxes must therefore exhibit

great deoxidizing and solvent capacities. Borax is considerably improved by boric acid additions, while magnesium chloride or similar salts provide the deoxidizing and solvent reaction required.

Practically all special fluxes, such as the Inco, Rostosky, and other "patent mixtures," contain borax-boric acid deoxidant mixtures as basic constituents. They are non-corrosive to nickel or high-nickel alloys, and produce dense, clean welds. They are easily applied in either dry or paste form and easily removed after welding. The paste is usually made by mixing the powder with alcohol, but may also be prepared by dissolving the powder in the required amounts of boiling water. The author has found that the alcoholic mixture is the more easily applied and less troublesome form of the two. If the flux is used in its powder form, it should not be sprinkled over the welding surfaces, but applied with the welding rod, the heated end of the rod being dipped into dry flux.

Care Needed in Clamping

Nickel exhibits a strong tendency to "work" under the influence of the welding flame, expanding and contracting to a higher degree than most other metals. This tendency, in connection with the pronounced hot-short range exhibited between the temperatures of 800 deg. and 1000 deg. C. (1450 deg. and 1850 deg. F.), necessitates special care in jigging the parts to be welded, the difficulties encountered from this source being more pronounced in sheet work than with heavy plates or castings. While a certain amount of fastening or jigging is required to prevent warping of the sheets, contraction and expansion forces must be taken into account in order to prevent undue stresses in the weld and in the adjacent metal, which, like the weld itself, passes through the hot-short range. Wherever possible, the welded material should not, therefore, be clamped down too rigidly, or where this is necessary (as in the case of repairing nickel tanks, etc.), the clamps should be loosened from time to time in order to release the stresses set up by expansion or contraction.

Apart from the fact that rigid jigging is not the proper way of welding nickel, advanced nickel welding practice prevents too far a spread of the welding heat throughout the adjacent material, and this may well be combined with jigging arrangements. Instead of using clamps in ordinary sheet welding, heavy iron or steel bars tapering down to a narrow edge on one side, are placed on the sheets as near as possible to the welding seams. While holding the sheets in place, they allow the metal to expand and contract in a natural manner, besides acting as chills which absorb the heat transmitted from the weld, thus counteracting the forces tending to cause buckling and warping of the sheets.

Instead of iron or steel bars, copper bars are sometimes employed for this purpose in order still further to improve the chilling effect. However, since the base plates usually consist of heavy iron or steel sections, and also act as chills, it is obvious that the chilling effect acting on the comparatively thin nickel sheets from both sides does not necessitate the use of as highly conductive, but also comparatively expensive, a material as copper.

Edge Welding Without Welding Rods

This method of jigging may be employed for butt welding as well as edge welding, the latter process being more satisfactory in welding thin nickel sheets. Attention is called to the fact that in edge welding the edges should not be flanged straight up, but to slightly less than 90 deg., so that only the upper edges touch each other. They should be as short as possible and of accurately equal height. No welding rods are required in this case, the edges being merely melted down, but special reducing fluxes must be used in order to replace the deoxidizing materials ordinarily introduced with the welding rod metal. The alcoholic paste used for this purpose should be of higher consistency than ordinary nickel welding pastes, and must be painted on both sides of the two edges.

A frequent source of faulty nickel welding lies in incompletely fused seams. While perfectly dense and fused at the surface of the weld, the bottom edges may not have been thoroughly melted. The notch effect produced on bending the sheets at the weld then causes rapid fracture and opening of the seam. This may be due to the cooling effect of the base plate if the welding edges are in direct contact with the steel, the chilling effect thus produced also affecting the welding speed. Base plates should therefore be provided with grooves sufficiently deep and wide to form an insulating air cushion and to take up a small excess of weld metal, which, in passing through the seam, will cause perfect fusion of the bottom edges.

Left-to-Right Welding for Heavy Sheets

Another factor of considerable importance is the direction of welding and the sequence of burner and welding rod. In welding from right to left, the oldest and most common method of nickel welding, the welding rod is carried ahead of the flame, which is moved to and fro along the edges of the sheets. Welding from left to right, which is now considered to be better suited to heavy sheets, etc., is carried out by conducting the flame ahead of the welding rod, moving the latter in a puddling motion, while the welding flame moves steadily forward. Right-to-left welding, with some practice and skill, may be employed for both thin and heavy sheets, while left-to-right welding should be applied only to heavy sheets, puddling with welding rod being less satisfactory for thin sheets than the to-and-fro motion of the flame, which delays solidification of the melt and assists the escape of the gases from the metal.

Wherever possible, the welding seam should be hammered in order to refine the grain and improve the strength and ductility of the weld. Although not quite as pronounced as in the case of copper welds, the increase in strength obtained by hammering usually amounts to 25 to 30 per cent, while in certain instances the increase may exceed 75 per cent of the original strength of the weld metal.

Hammer-Welding

Nickel sheets may be welded, like copper and aluminum parts, by hammering. Indeed, hammer-welding of nickel sheets has, until recently, been preferred to autogenous welding, where the intricacies of the latter method have not been sufficiently understood, since it avoids the difficulties above outlined, the chief advantages of this process being the freedom from porosities and sulphide-oxide impurities frequently encountered in autogenous welds.

Although a very simple process in principle, much experience and skill is required to carry it out successfully, the most important factor being the correct heating of the welding surfaces. The best hammer-welding temperature is about 1000 deg. C. (1800 deg. F.), the useful temperature range being only about 100 deg. F. Since it is practically impossible to control the temperatures mechanically, long experience is required correctly to judge temperatures by feel (radiation) and appearance. If correct hammer-welding temperatures are not attained, the nickel welds incompletely or not at all, while temperatures above the narrow, useful range cause oxidation and burning of the nickel, resulting in weak welds.

Another important factor is the hot-shortness of nickel at the hammer-welding temperatures. This brittleness is not sufficiently pronounced to cause trouble if the overlapping edges of the sheets rest securely on the base plate, or anvil. The amount of overlapping depends on the type of weld produced and on the thickness of the sheets and ranges from 1½ to 2 times the thickness of the sheet. It is obvious that in the case of very thin nickel sheets the normal relation between the degree of overlapping and the thickness of sheet

(Concluded on Page 70)

Metal Forms for Floor Become Finished Ceiling

THE metal form finished ceiling floor erected for load test. Stiffening angles and sections are in place ready to receive the concrete and wire mesh reinforcement.

THE use of steel sheets to serve both as a form and also as a finished ceiling, in connection with concrete floor arches, has been developed by the Grossman Steel Stair Corpn., Leggett Avenue, New York. The new construction is known as the Metal Form Finished Ceiling and consists of properly joined and suspended steel sheets horizontally placed to act as a form for the concrete floor arch. But these steel sheets are not removed when the concrete has set; they remain in place, integral with the concrete, forming a steel sheath on the underside. Suitably painted this steel coating takes the place of plaster, and smooth, flat, seamless, steel ceilings are thus obtained. Similar means of casing and decorating are provided for the beams.

Steel sheets, as long as the distance between the beams, and 2 ft. wide, are provided with steel angles at each side, to which they are welded. These angles provide the means of interlocking between one sheet and another, and also serve to stiffen the construction. Prolongations of the side angles rest on the structural steel beams to support the structure. When the concrete arch is cast in this form, the side reinforcing angles, and other anchors secured to the sheet, are firmly embedded in the concrete to serve as additional reinforcement. Trough-shaped beam casings are suspended from the side reinforcing angles to act as forms and covering for the beams.

The Testing Laboratories of the Department of Civil Engineering of Columbia University, under the direction of Prof. A. H. Beyer, tested the construction on full-size samples set up in the New York City plant of Grossman corporation. Among the more important results of the test are the following:

One type of the metal form finished ceiling, with a cinder concrete arch thickness averaging 3.58 in., sustained a live load of 465.9 lb. per sq. ft. with a maximum reflection of 0.17 in. Another type with an average cinder concrete arch of only 3.03 in. sustained a live load of 780.4 lb. per sq. ft. Upon removal of the load 18 hr. later deflections were reduced to zero and 0.15 in., respectively.

The combination sheet steel and concrete construction, which ties all the structural steel floor beams together, is regarded as providing effective bracing against wind and earth tremors.

Considerable emphasis is placed on the saving in weight. Concrete can be reduced 1 in. in thickness with a consequent saving of 9 lb. per sq. ft. The elimination of plaster, including the plaster on the beam haunches, saves another 8 lb. This is offset by the weight of the sheet steel form, which is 4 lb. per sq. ft., making a total net saving of 13 lb. On the basis of a combined live and dead load to be carried by the structural steel of 116 lb. per sq. ft., this 13-lb. reduction in weight is equivalent to 11.2 per cent.

In terms of cost and speed of construction as well as the features outlined, this use of sheets is believed to be well suited to the vast projects of public works about to be started.

THE forms have been filled with 2 in. of 1:2:5 cinder concrete which has received a 1 in. thick finish of 1:2 Portland cement mortar. The reinforcement for the slab consists of 4 x 16 in. American Steel & Wire Co's. plain style welded mesh, with No. 3 gage longitudinal wires 4 in. on centers and No. 8 gage transverse wires 16 in. on centers.

Quality of Gases for Various Purposes

BLAST furnace gas is used in the rolling mills of some ten plants in the United States, and, says William A. Haven, Arthur G. McKee & Co., Cleveland, the number is increasing yearly as the cost of the final cleaning of the gas is reduced. He included the subject in a paper on American Blast Furnace Design and Practice contributed to the (British) Iron and Steel Institute. Besides mentioning that straight blast furnace gas has proved a superior fuel for soaking pits, he touched on its use mixed with coke-oven gas for open-hearth and various types of heating furnaces in the rolling mills. The equality of mixed gases reported as being most suitable for some of the purposes to which it has been applied is listed as follows: For soaking pits, 90 B.t.u. per cu. ft.; for open-hearth furnaces, 250 B.t.u.; for merchant-mill heating furnaces, 325 B.t.u.; for sheet and pair furnaces, 150 B.t.u.; for sheet box-annealing, 125 B.t.u.; for sheet galvanizing pots, 90 B.t.u.

National Steel Corpn., Pittsburgh, has declared a quarterly dividend of 25c. a share on its outstanding capital stock, payable Sept. 30 to holders of record Sept. 20.

Code Is Submitted by Structural Steel and Iron Fabricating Industry

Will be Administered by American Institute of Steel Construction— Minimum Wages Range from 27c. to 40c. an Hour

THE structural steel and iron fabricating industry, acting through the American Institute of Steel Construction, Inc., New York, submitted a code of fair competition to the National Industrial Recovery Administration on Sept. 5.

In its first two articles covering definitions and purpose, the code differs from that of the iron and steel industry only in terminology, the most important differences being as follows: The term "products" refers only to fabricated steel or iron shapes, plates or bars (other than concrete reinforcing bars) for use in the construction of buildings, bridges or other steel structures. The term "erection work" means the work of erecting products in place in buildings, bridges or other steel structures for which such products were fabricated. The term "the industry" means and includes the business of fabricating in the United States and selling products, or any of them, and the business of doing the erection work thereon in the United States when the fabrication thereof and the erection work thereon are done by the same members of the code.

Definition of labor under the code includes the term "first-class bridgeman," meaning any employee qualified to perform all the duties customarily performed by a skilled erector, riveter and rigger and employed on erection work to perform any or all of such duties.

Of special interest is section 19, which reads as follows:

"The term 'an affiliated group' means one or more corporations connected through stock ownership with a common parent corporation if (1) at least 50 per cent of the stock of each such corporation (except such common parent corporation) is owned directly by one or more of the other corporations, and (2) such common parent corporation owns directly or through one or more of the other corporations at least 50 per cent of the stock of such other corporations. The term 'an affiliated company of a member of the code' means (1) a corporation which is one of an affiliated group that also includes such member of the code, or (2) a corporation at least 50 per cent of the stock of which is owned by such member or by such member and any other member or members of the code. For the purposes of this section 19 the term 'stock' does not include non-voting stock which is limited and preferred as to dividends."

The remainder of the code follows:

ARTICLE III
Membership in the Code

SECTION 1.—It is of the essence of the Code that all members of the Industry which shall comply with the provisions of the Code shall be entitled to participate in its benefits upon the terms and conditions set forth in the Code.

SECTION 2.—Some of the erection work on products in the United States is done by erectors who are engaged in the business of doing such erection work, but who do not operate a plant or plants in the fabrication of any product and, therefore, are not members of the Industry within the meaning of that term as hereinbefore in Section 5 of Article I defined. Such erectors are frequently in competition with members of the Industry in bidding for erection work, but inasmuch as such erection work is for the most part, if not entirely, in intrastate commerce, the members of the Industry have deemed it impracticable to attempt to extend the provisions of the Code to apply to erection work which shall be done by any such erector, unless such erector shall voluntarily agree to be bound thereby. Nevertheless, in order that such erectors may, if they shall so desire, avail themselves of the benefits of the Code and that its provisions may thus be applicable to erection work which shall be done by such erectors and thereby the policy of Title I of the National Industrial Recovery Act shall be more fully effectuated, any such erector who shall desire to become a member of the Code shall be eligible for membership therein. Accordingly, any member of the Industry, and any other person, firm, association or corporation engaged in the business of doing erection work in the United States, is eligible for membership in the Code.

SECTION 3.—Any person, firm, association or corporation eligible for membership in the Code which shall desire to become a member thereof may do so by signing and delivering to the Secretary a letter substantially in the form set forth in Schedule A annexed hereto.

SECTION 4.—A meeting of members of the Code may be called and held at any time by order of the Board of Directors, or by members of the Code having the right to cast at least 50 per cent of all the votes that might be cast at such meeting, if all the members of the Code were present thereat, or not less than five days' notice to each of such members stating the time and place of such meeting and the purposes thereof.

SECTION 5.—Subject as hereinafter in this Section 5 provided, at each meeting of the members of the Code each member thereof shall have as many votes as shall equal the sum of (*a*) the quotient obtained by dividing by 1000 the average annual amount in tons of the products fabricated by such member and delivered for use within the United States during the four calendar years 1928 to 1931, inclusive, and (*b*) the quotient obtained by dividing by 10,000 the average annual amount in tons of the products the erection work on which in the United States was done by such member during the four calendar years 1928 to 1931, inclusive. Fractions in such quotients shall be disregarded; *provided, however,* that each member of the Code shall have at least one vote. The number of votes which each member of the Code shall be entitled to cast at any meeting of the members thereof shall be determined by the Board of Directors in accordance with the provisions of this Section 5. If any member of the Industry shall within thirty days after it shall have become a member of the Code, file with the Secretary a petition stating that the average annual amount in tons of the products fabricated and delivered by such member for use within the United States during the four calendar years 1928 to 1931 inclusive, did not fairly represent the comparative position of such member in the Industry at the end of such four-year period, the Board of Directors may fix the amounts in tons which in its opinion would fairly represent the position of such member in the Industry at the end of such four-year period and the number of votes to which such member shall be entitled at meetings of members of the Code shall be computed on the basis of the amounts so fixed. The Board of Directors may also, from time to time in its discretion, adjust the amounts in tons on the basis of which the number of votes of each member of the Code shall be computed in such manner as fairly to apportion such votes among the members of the Code with due regard to their comparative positions in the business of fabricating, and/or doing erection work on, products used in the United States at the time of any such adjustment; *provided, however,* that no adjustment made by such Board under the provisions of this sentence shall take effect prior to Jan. 1, 1935. Any person or firm who shall be a member of the Code may, and any association or corporation which shall be a member of the Code shall, vote at meetings of the members of the Code by proxy in writing duly executed by such member and filed with the Secretary. Any such proxy may be for a specified meeting or be a general proxy for any or all meetings that may be held until such proxy shall have been revoked by an instrument in writing duly executed and filed with the Secretary by the member of the Code which gave such proxy.

SECTION 6.—Except as otherwise provided in Section 2 of Article XII of the Code, at each meeting of the members of the Code, members thereof having the right to cast at least two-thirds of all the votes that might be cast at such meeting, if all the members of the Code were present thereat, shall constitute a quorum for the transaction of business at such meeting.

ARTICLE IV.

Hours of Labor, Rates of Pay and Other Conditions of Employment

SECTION 1.—Pursuant to subsection (*a*) of Section 7 of the National Industrial Recovery Act and so long as the Code shall be in effect, the Code shall be subject to the following conditions:

(1) That employees shall have the right to organize and bargain collectively through representatives of their own choosing, and shall be free from the interference, restraint, or coercion of employers of labor, or their agents, in the designation of such representatives or in self-organization or in other concerted activities for the purpose of collective bargaining or other mutual aid or protection;

(2) that no employee and no one seeking employment shall be required as a condition of employment to join any company union or to refrain from joining, organizing or assisting a labor organization of his own choosing; and

(3) that employers shall comply with the maximum hours of labor, minimum rates of pay, and other conditions of employment, approved or prescribed by the President.

SECTION 2.—Except in the case of executives, those employed in supervisory capacities and in technical work and their respective staffs, those employed in emergency and repair work, watchmen and janitors, in so far as practicable and so long as employees qualified for the work required shall be available in the respective localities where such work shall be required and having due regard for the varying conditions under which the work must be performed, none of the members of the Code shall cause or permit any employee to work at an average of more than 40 hours per week in any six months period or to work more than 48 hours or more than 6 days in any one week. For the purposes of this Section 2 the first six months period for each employee in the employ of any member of the Code at the effective date thereof shall begin with that date, and the first six months period for any employee thereafter employed by any member of the Code shall begin with the date of employment of such employee by such member. After the date of the employment by any member of the Code of any employee such member shall not knowingly permit such employee who also shall have performed work for one or more other employers to work for such member such number of hours as would result in a violation of the Code had all such work been performed for such member.

SECTION 3.—None of the members of the Code shall employ in or about its plants or in or about any erection work any person under 16 years of age.

SECTION 4.—Throughout the history of the Industry wage differentials have existed as among different localities in the United States, due in the main to differences in living costs and general economic conditions and the ability adequately to man the industries in the respective localities. The establishments in the Industry in the different localities have been developed under the varying conditions prevailing in such localities for the assembly of material and the economical fabrication and distribution thereof as well as the varying conditions as among different localities in respect of the availability of adequate skilled and unskilled labor and the above-mentioned differences in wage rates. It is, therefore, essential in the establishment of minimum rates of pay for labor in the Industry that these wage differentials shall be recognized. Accordingly, after a survey of the matters bearing on such differences in the various sections of the United States, for the more effective administration of the Code, the districts described in Schedule B annexed hereto have been established and the minimum rates of pay for labor have been fixed for the various localities described in Schedule C annexed hereto within the respective districts.

SECTION 5.—Subject as hereinafter in Section 7 of this Article IV provided and until changed by amendment of the Code as hereinafter in Article XII provided:

(*a*) The minimum rate of pay per hour which each member of the Code shall pay for common labor employed in its plant or plants in any of the localities described in Subdivision 1 of Schedule C annexed hereto shall be the rate of pay set forth in such Subdivision I for such common labor in such locality.

(*b*) The minimum rates of pay per hour which each member of the Code shall pay for labor of the respective classes specified in Subdivision II of such Schedule C which shall be employed by such member in erection work in any of the localities described in such Subdivision II shall be the respective rates of pay set forth in such Subdivision II for such classes of labor in such work in such locality.

(*c*) None of the members of the Code shall pay any of its employees performing any class of labor specified in such Schedule C in any such locality any rate of pay less than the rate specified in such Schedule C for such class of labor in such locality.

(*d*) The respective rates of pay per hour for all employees, other than common laborers, employed in any plant of any member of the Code shall be such that the minimum monthly average rate of pay per hour for all employees (except plant superintendents) employed in such plant shall be 127½% of the minimum rate of pay per hour for common labor in such plant specified in Subdivision I of such Schedule C for the locality in which such plant is located. For all purposes of this paragraph (*d*) the monthly average rate of pay per hour at any plant of any member of the Code in any calendar month shall be deemed to be the quotient obtained by dividing the total compensation paid to all employees (except plant superintendents) at such plant for such month by the total number of hours worked by such employees at such plant in such month.

(*e*) The respective rates of pay per hour for all employees, other than first-class bridgemen and common laborers, employed on any job of erection work on which ten or more employees shall be employed by any member of the Code shall be such that the minimum monthly average rate of pay per hour for all employees employed on such job by such member (except the foremen and the resident engineer in charge of the job at the place of such work) shall be the percentage specified in Subdivision II of such Schedule C for the locality in which such work shall be performed of the minimum rate of pay per hour for first-class bridgemen specified in such Subdivision II for such locality. For all purposes of this paragraph (*e*) the monthly average rate of pay per hour paid in any calendar month by any member of the Code on any such job of erection work shall be deemed to be the quotient obtained by dividing the total compensation paid in such month by such member to all employees employed on such job (except the foremen and the resident engineer in charge of the job at the place of such work) by the total number of hours worked on such job by such employees in such month.

(*f*) The employees referred to in the foregoing paragraphs (*d*) and (*e*) of this Section 5 shall not include superintendents, managers, civil engineers, draughtsmen, accountants, clerks or stenographers, or other employees whose pay is customarily included as a part of administrative and/or selling expenses. The respective rates of pay which shall be paid by each member of the Code to its employees of the classes hereinbefore in this paragraph (*f*) referred to (not including such employees whose rates of pay were more than $35 per week on August 15, 1933) in any locality shall be at least 80% of the respective rates of pay (not including any bonus) paid by it to its employees of such classes in such locality on July 16, 1928. Each member of the Code which shall not have done so since June 15, 1933, shall make such adjustments in the rates of pay of its employees of the classes referred to in this paragraph (*f*) whose rates of pay on August 15, 1933, were greater than $35 per week (not including executives and heads of departments) as shall be fair and equitable to such employees.

(*g*) In the case of employees performing work for which they are paid per piece of work performed, the minimum rate of pay which each member of the Code shall pay for such work shall be sufficient to produce at the average rate of performance of such work at the time prevailing at the plant of such member or in the locality where such work is performed the minimum rate of pay per hour which such member shall at the time be required under the Code to pay for such class of work in the locality in which such plant is located or such work is performed.

(*h*) Anything in the Code to the contrary notwithstanding, the minimum rate of pay per hour for any employee who shall be an apprentice, learner, janitor or watchman, or who because of age or disability shall not be engaged in active manual labor, shall be 80% of the minimum rate of pay per hour for common labor applicable under Subdivision I of such Schedule C to the plant at which such employee shall be employed; *provided, however,* that the number of such employees who shall be employed at such plant shall not exceed 5% of the total number of employees at the time employed at such plant.

(*i*) The rates of pay and the monthly average rates of pay prescribed in this Section 5 and in such Schedule C shall not be understood to be the maxi-

mum rates of pay or maximum monthly average rates of pay for their respective localities, but none of the members of the Code shall be required to pay any of its employees performing any class of labor in any locality a rate of pay higher than the rate specified in this Section 5 or in such Schedule C for such locality for such class of labor, except as such member shall have agreed to pay such higher rate in any agreement heretofore or hereafter made by such member with its employees and at the time in effect.

SECTION 6.—Each member of the Code which shall violate any provision of Section 5 of this Article IV shall pay to the Treasurer as an individual and not as treasurer of the Institute, in trust, a sum equal to $3 per ton of each ton of any product or products which shall have been fabricated in the plant of such member in which the violation shall have occurred during the continuance of such violation or in the erection work on which such violation shall have occurred and which shall have been erected during the continuance of such violation, as the case may be.

SECTION 7.—Nothing in the Code shall be deemed to require any member thereof to pay for labor employed by it in erection work on any job for any Federal, state, municipal or other governmental authority or for any corporation owned or controlled by any such authority or authorities any rate of pay in excess of the rate of pay which may be prescribed for such class of labor on such job under or pursuant to any law or regulation of any competent governmental authority.

SECTION 8.—In order fully to effectuate the policy of Title I of the National Industrial Recovery Act and to prevent unfair methods of competition in the Industry the maximum hours of labor and minimum rates of pay and minimum monthly average rates of pay for labor established under the Code should apply to all labor of the same class or classes which shall be engaged in the erection work on any product fabricated in the Industry, whether or not such erection work shall be done by a member of the Code. Accordingly, if any member of the Code shall sublet any erection work to any other party not a member of the Code, such member shall procure from such other party an agreement substantially in such form as shall have been approved by the Board of Directors whereby such other party shall agree to comply, and to cause any sub-contractor to which such other party may in turn sublet such erection work or any part thereof to comply, with the provisions of this Article IV in respect of the maximum hours of labor and minimum rates of pay and minimum monthly average rates of pay for labor which shall be employed by such other party or such sub-contractor, as the case may be, in such erection work. Each such agreement shall provide that, in case of any violation thereof by the party which shall thereby agree to comply with the provisions of this Article IV in respect of maximum hours of labor and minimum rates of pay and minimum monthly average rates of pay, such party will pay to the Treasurer as an individual and not as treasurer of the Institute, in trust, a sum equal to $5 per ton for each ton of such product which shall have been erected in violation of such agreement. Each member of the Code which shall violate any provision of this Section 8 shall pay to the Treasurer as an individual and not as treasurer of the Institute, in trust, a sum equal to $5 per ton for each ton of any product or products the erection work on which shall have been sublet by such member in violation of this Section 8.

SECTION 9.—None of the members of the Code shall sublet all or any part of the work of fabricating any product or products in quantities of 10 tons or over for any one job, or the making of any drawings in connection therewith, to any person, firm, association or corporation which shall not agree to conform to the provisions of the Code, or of another code of fair competition approved by the President pursuant to the provisions of the National Industrial Recovery Act and applicable to such person, firm, association or corporation, in respect of maximum hours of labor and minimum rates of pay for labor which shall be employed on such work. Any member of the Code which shall sublet any such work in violation of this Section 9 shall pay to the Treasurer as an individual and not as treasurer of the Institute, in trust, a sum equal to $5 per ton for each ton of any product or products any such work on which shall have been so sublet by such member.

ARTICLE V.

Production and New Capacity

SECTION 1.—Adequate provision shall be made under the Code for the collection of statistics of sales and work and other data from which it may be determined from time to time whether in the circumstances any allocation of sales or work is necessary in order to effectuate the policy of Title I of the National Industrial Recovery Act. Should it at any time in the circumstances as they shall then exist appear to the Board of Directors that the policy of such Title I will not be effectuated because of the fact that through the Code sales and work are not allocated among the members thereof, then the Board of Directors shall recommend for the consideration of the members of the Code such rules and regulations for the purpose of allocating sales and/or work among its members, including the fixing of such liquidated damages for violations of such rules and regulations, as such Board shall deem to be necessary or proper in order to effectuate the policy of such Title I. The Board of Directors shall furnish to the Administrator a copy of any recommendations it shall make under this Section 1, together with summaries or compilations of any statistics and other data on which such recommendations shall be based.

SECTION 2.—It is the consensus of opinion in the Industry that, until such time as the demand for its products cannot adequately be met by the fullest possible use of existing capacities in the Industry, such capacities should not be increased. Accordingly, unless and until the Code shall have been amended as hereinafter provided so as to permit it, none of the members of the Code shall initiate the construction of any new structural steel or iron fabricating capacity; *provided, however,* that nothing herein contained shall be deemed to prohibit any member of the Code from modernizing, or changing the location of, any plant, or any part thereof, or combining two or more plants, or parts thereof, for the purpose of increasing the efficiency of such plant or plants. The President may, however, suspend the operation of the provisions of this Section 2.

ARTICLE VI.

Administration of the Code

SECTION 1.—The administration of the Code shall be under the direction of the Board of Directors. The Board of Directors shall have all the powers and duties conferred upon it by the Code and generally all such other powers and duties as shall be necessary or proper to enable it fully to administer the Code and to effectuate its purpose.

SECTION 2.—The Secretary shall act as Secretary under the Code. Under the direction of the Board of Directors, he shall keep all books (except books of account) and records under the Code and, except as such Board shall otherwise provide, shall collect, file and collate all statistics and other information required by such Board for the proper administration of the Code.

SECTION 3.—The Treasurer shall act as Treasurer under the Code and, under the direction of the Board of Directors, he shall have custody of, and have charge of the disposition of, all funds collected under the Code; and he shall keep proper books of account showing the collection and disposition thereof.

SECTION 4.—The Board of Directors shall have power from time to time (*a*) to appoint and remove, and to fix the compensation of, all such other officers and employees and all such accountants, attorneys and experts, as such Board shall deem necessary or proper for the purpose of administering the Code and (*b*) to fix the compensation of the Secretary and the Treasurer for their services in acting under the Code.

SECTION 5.—The expenses of administering the Code shall be borne by the members thereof. The Board of Directors may from time to time make such assessments on account of such expenses against the members of the Code as it shall deem proper and such assessments shall be payable as such Board shall specify. The part of such expenses which shall be assessed against each member of the Code shall bear the same relation to the total of such expenses as the number of votes which, pursuant to the provisions of the Code, such member might cast at a meeting of the members thereof held at the time of any such assessment shall bear to the total number of votes that might be cast thereat by all the then members of the Code. Failure of any member of the Code to pay the amount of any assessment against such member for a period of thirty days after the date on which it becomes payable shall constitute a violation of the Code.

SECTION 6.—The Board of Directors may from time to time appoint such committees as it shall deem necessary or proper in order to effectuate the purpose of the Code, and it may delegate to any such committee generally or in particular instances such of the powers and duties of the Board of Directors under the Code as such Board shall deem necessary or proper in order to effectuate such purpose. Any member of any such committee may be a member of the Board of Directors or an officer or a director of a member of the Code or a person not having any official connection with any member of the Code or with the Institute, as the Board of Directors shall deem proper.

SECTION 7.—The members of the Code recognize that questions of public interest

are or may be involved in its administration. Accordingly, representatives of the Administration consisting of the Administrator and one or two other persons appointed by him (who shall be persons not having or representing interests antagonistic to the interests of members of the Code) shall be given full opportunity at such times as shall be reasonably convenient to discuss with the Board of Directors or any committees thereof any matters relating to the administration of the Code and to attend meetings of the Board at which action on any such matters shall be undertaken and to make recommendations as to methods or measures of administering the Code. Due notice of all such meetings of the Board of Directors shall be given to such representatives of the Administration. The records of the Board of Directors relating in any way to the administration of the Code shall be open to such representatives at all reasonable times. They shall be afforded by the Board of Directors complete access at all times to all records, statistical material or other information furnished or readily available to the Board of Directors in connection with, or for the purposes of, the administration of the Code. The Board of Directors, acting directly or through one or more committees appointed by it, shall give due consideration to all requests, suggestions or recommendations made by such representatives of the Administration and render every possible assistance to such representatives in obtaining full information concerning the operation and administration of the Code, to the end that the President may be fully advised regarding such operation and administration through reports that may be made to him from time to time by such representatives, and to the end that the President may be assured that the Code and the administration thereof do not promote or permit monopolies or monopolistic practices, or eliminate or oppress small enterprises, or operate to discriminate against them and do provide adequate protection of consumers, competitors, employees and others concerned and that they are in furtherance of the public interest and operate to effectuate the purposes of Title I of the National Industrial Recovery Act.

ARTICLE VII.

Prices and Terms of Payment

SECTION 1.—None of the members of the Code shall contract or offer to sell any product and/or to do any erection work on any product (except to or for an affiliated company of such member) at a price which shall be less than the reasonable estimated cost to such member of such product and/or of such erection work, as the case may be, plus a reasonable profit thereon, which profit shall not in any case be less than 7½% of such estimated cost. For the purposes of this Article VII.

(*a*) all estimates of cost in fabricating any product (including overhead and general and selling expenses) shall be based on the minimum rates of pay and the minimum monthly average rates of pay at the time in effect under the Code as provided in Section 5 of Article IV and in Subdivision I of Schedule C thereof for the locality in which the plant of such member at which such product shall be fabricated is located; *provided, however,* that if such rates shall be less than the minimum rates of pay and the minimum monthly average rates of pay for the same classes of labor at the time in effect under the Code as provided in said Section 5 and in Subdivision I of such Schedule C for the locality in which such product is to be delivered or erected, then such estimates of cost (including overhead and general and selling expenses) shall be based on the minimum rates of pay and the minimum monthly average rates of pay for such classes of labor at the time in effect under the Code as provided in said Section 5 and in Subdivision I of such Schedule C for such latter locality;

(*b*) all estimates of cost of erection work (including overhead and general and selling expenses) shall be based on the minimum rates of pay and the minimum monthly average rates of pay for labor employed on such work at the time in effect under the Code as provided in Section 5 of Article IV and in Subdivision II of Schedule C thereof for the locality in which such erection work is to be done, or in the case of erection work referred to in Section 7 of Article IV of the Code, the rates of pay prescribed as provided in said Section 7;

(*c*) the estimated cost of shapes, plates and bars shall be the respective published base prices therefor at the respective basing points therefor nearest in terms of delivered prices to the place where the structure for which such shapes, plates or bars are to be used is to be erected, plus all published extras thereon and the all-rail published tariff freight charges thereon from such basing points to such place, or if such structure is to be erected at any such basing point, the published tariff switching charges (if any) which are to be added to the base prices of such shapes, plates or bars at such basing point; *provided, however,* that the Board of Directors may from time to time by regulations copies of which shall be filed with the Secretary and mailed to all members of the Code modify the method of computing such estimated cost in order to conform to any changes which may be made in the methods of selling shapes, plates and bars by the producers thereof;

(*d*) all estimates of cost shall include such elements of cost as the Board of Directors shall from time to time prescribe and the allocation of overhead and general and selling expenses in respect thereof shall be on such basis as shall from time to time be prescribed by such Board.

SECTION 2.—Whenever any member of the Code shall bid, or agree to a price, for the sale of, and/or erection work on, any product or products (except to or for an affiliated company of such member) in an aggregate amount of 50 tons or more, such member shall forthwith mail to the Secretary in a sealed envelope a duplicate copy of its lowest bid or of the agreement containing the agreed price therefor, or, if such bid or agreed price shall not be in writing, a statement showing such bid or agreed price and all terms and conditions thereof. Such copy or statement shall also show the estimated weight of such product or products and the date of such bid or agreement. Such envelope shall bear on its face a legend showing the location of the structure to which such bid or price relates, the names of the owner or contractor for which the work is to be done and of the architect or engineer in charge thereof and the time at which bids for such work are to be opened, if such time shall be known to such member. The Secretary shall retain each such envelope unopened until the contract for such work shall have been awarded. Promptly after the definite award of such contract the member of the Code to which such contract shall have been awarded shall notify the Secretary thereof and the Secretary (*a*) shall open and remove from each such envelope the copy or statement of a bid or agreed price for such work therein contained and shall thereafter keep such copy or statement on file in his office for a period of at least one year; and (*b*), if a copy or statement of more than one bid or agreed price for such work shall have been received by him, he shall promptly mail a summary thereof to each member of the Code from which any such copy or statement shall have been received by him.

SECTION 3.—If any member of the Code shall file with the Secretary a written complaint claiming that the price at which any other member of the Code shall have contracted or offered to sell any product and/or to do any erection work is in violation of Section 1 of this Article VII, the Board of Directors may in its discretion investigate such complaint if it shall determine that the matters complained of therein may result or may have resulted in unfair competition in the Industry and may tend or may have tended to defeat the policy of Title I of the National Industrial Recovery Act. In determining whether to investigate such complaint the Board of Directors shall consider (*a*) whether, on the basis of the reports filed with the Secretary under the Code, the member of the Code against which such complaint shall have been filed has, since the effective date of the Code, contracted for more than its fair share of the business of fabricating, and/or doing erection work on, products used in the United States, as compared with other members of the Code; and (*b*) whether the bid or agreed price of such member in respect of which such complaint shall have been filed, as compared with the other low bids for the same work, was such as to warrant further investigation. Before beginning any investigation, however, on such complaint, the Board of Directors may in its discretion require the member filing such complaint to deposit with the Treasurer security satisfactory to such Board for the payment of the costs and expenses of such investigation. For the purpose of such investigation the Board of Directors shall have power to require the member of the Code against which such complaint shall have been filed to furnish such information concerning the estimated cost to such member of such product and/or of such erection work and the estimated profit of such member on the sale of such product and/or on such erection work as the Board of Directors shall deem necessary or proper for such purpose. Upon such investigation the Board of Directors shall give such member an opportunity to be heard and to present evidence with a view of justifying such price and such Board shall also give to any other member of the Code which shall have filed a complaint in respect of such price or which shall be interested therein an opportunity to be heard and to present evidence material to such complaint. If the Board of Directors after such investigation shall determine that such price was less than the reasonable estimated cost to the member of the Code against which such complaint was filed of such product and/or such erection work plus a reasonable

profit thereon as provided in Section 1 of this Article VII and, therefore, that the making of such price constituted a violation of the provisions of the Code, the Board of Directors shall have power to require such member to pay to the Treasurer as an individual and not as treasurer of the Institute, in trust, as and for liquidated damages for such violation, such sum as such Board shall fix, but in any case not exceeding twice the difference between such price and such reasonable estimated cost plus such reasonable profit as determined by such Board, together with the costs and expenses of such investigation. If after such investigation the Board of Directors shall determine that such member was not guilty of a violation of the Code, the costs and expenses of such investigation shall be paid by the member of the Code which shall have made such complaint. The determination of the Board of Directors upon such complaint shall be filed with the Secretary and he shall give written notice thereof to all members of the Code affected thereby. Such notice having been given, such member or members shall forthwith pay to the Treasurer as an individual as aforesaid the sum or sums required to be so paid by such member or members pursuant to such determination. Subject as hereinafter in Section 6 of Article XI provided, the determination of the Board of Directors upon any complaint filed under this Section 3 shall be final and conclusive upon all members of the Code.

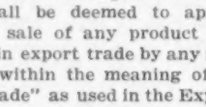
SECTION 4.—Pursuant to the provisions of Section 6 of Article VI of the Code, the Board of Directors may delegate to any committee which such Board may designate any or all of the powers and duties of such Board under the foregoing Section 3; *provided, however,* that, anything in such Section 6 of Article VI to the contrary notwithstanding if any member of the Code which shall be aggrieved by the decision of any such committee shall, within fifteen days after such decision shall have been filed with the Secretary, file with the Secretary an appeal from such decision, the Board of Directors shall, as soon as practicable after the filing of such appeal and in any case within three months thereafter, review such decision in such manner, and take such action in respect thereof, as such Board shall deem proper. The determination of such Board upon any such appeal shall be filed with the Secretary and he shall give prompt notice thereof to the member or members of the Code affected thereby.

SECTION 5.—The standard terms of payment shall be as set forth in Scehdule E annexed hereto; *provided, however,* that the Board of Directors shall have power from time to time to change such standard terms of payment by regulations a copy of which shall be filed with the Secretary and mailed to each member of the Code. Except as may be otherwise specified in the invitation for bids for the sale of any product and/or the erection work thereon, none of the members of the Code shall allow more liberal trems of payment than those at the time in effect under such Schedule E or such regulations, as the case may be.

SECTION 6.—For all purposes of the Code a delivery of any product made and/or any erection work done pursuant to any contract therefor shall be regarded as a sale made and/or erection work done at the time of the making of such contract, and a sale made and/or erection work done by any member of the Code indirectly through any affiliated company of such member shall be deemed to be a sale made and/or erection work done by such member.

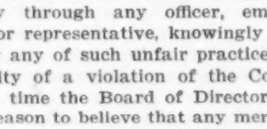
SECTION 7.—Nothing in the Code contained shall be deemed to apply to or affect the sale of any product for direct shipment in export trade by any member of the Code within the meaning of the term "export trade" as used in the Export Trade Act, or unless and to the extent that the Board of Directors shall otherwise determine, the sale of any product by any such member for direct shipment to Alaska, the Canal Zone, the Philippines, Hawaii or Puerto Rico or other insular possession of the United States of America, or any erection work on any such product.

SECTION 8.—If and to the extent requested by the Administrator, all decisions of, approvals given by, and rules and regulations prescribed by, the Board of Directors pursuant to any provision of this Article VII shall be reported to him.



ARTICLE VIII.
Unfair Practices

For all purposes of the Code the acts described in Schedule F annexed hereto shall constitute unfair practices. Such unfair practices and all other practices which shall be declared to be unfair practices by vote of the members of the Code as provided in paragraph S of such Schedule F or by any amendment to the Code adopted as hereinafter in Article XII provided and at the time in effect shall be deemed to be unfair methods of competition in commerce within the meaning of the Federal Trade Commission Act as amended, and the using or employing of any of them shall be deemed to be a violation of the Code, and any member of the Code which shall directly, or indirectly through any officer, employee, agent or representative, knowingly use or employ any of such unfair practices shall be guilty of a violation of the Code. If at any time the Board of Directors shall have reason to believe that any member of the Code is using or employing any practice or practices which such Board shall deem contrary to the policy of Title I of the National Industrial Recovery Act, whether or not any such practice is described as an unfair practice in such Schedule F, such Board shall have power to investigate such practice or practices and to make such report thereon and such recommendation in respect thereof to the members of the Code as such Board shall deem necessary or proper in order to effectuate the policy of such Title I.



ARTICLE IX.
Reports and Statistics

SECTION 1.—Each member of the Code shall, on or before the eighth day of each month, file with the Secretary a report or reports, substantially in such form as shall have been approved by the Board of Directors, containing the information specified in Section 1 of Schedule D annexed hereto which shall relate to the business of such member.

SECTION 2.—On or before the 15th day of each month the Secretary shall cause to be mailed to each member of the Code a report or reports containing the information specified in Section 2 of Schedule D annexed hereto. If the Administrator shall so request, a copy of each such report shall also be sent to him.

SECTION 3.—Within 15 days after any member of the Code shall have become such member, it shall file with the Secretary a report describing in reasonable detail the cost accounting system employed by such member. The Board of Directors shall, as soon as practicable after the filing of such report with the Secretary, cause such report to be examined by an accountant or accountants designated by such Board and shall recommend to the respective members of the Code such changes in their cost accounting systems as the Board of Directors shall deem necessary or advisable to effectuate the purpose of the Code. At the request of any member of the Code the Board of Directors shall furnish such member with such information and/or assistance as such Board may deem necessary or proper in order to enable such member to make such report or to put into effect any recommendations of such Board in respect of the cost accounting system of such member.

SECTION 4.—As soon as practicable after the effective date of the Code the Board of Directors shall cause to be prepared and filed with the Secretary a standard form of proposal and a standard form of contract for the use of members of the Code in bidding or contracting for the sale of any product and/or the erection work thereon. From and after the date on which such standard forms shall be approved by the Board of Directors and filed with the Secretary and notice of the filing thereof shall be given to the members of the Code, each member of the Code shall whenever possible use such forms in bidding or contracting for the sale of any product and/or the erection work thereon. If the Administrator shall so request, a copy of such standard form of proposal and a copy of such standard form of contract when prepared shall be sent to him.

SECTION 5.—Any or all information furnished to the Secretary by any member of the Code, and any or all information furnished to the Board of Directors by any such member in connection with any investigation by such Board under any provision of the Code, shall be subject to checking for the purpose of verification by an examination of the books and accounts and records of such member by any accountant or accountants or other person or persons designated by the Board of Directors and approved by such member and shall be so checked for such purpose, if the Board of Directors shall require it. The cost of each such examination shall be treated as an expense of administering the Code, or a part of the costs and expenses of such investigation, as the case may be; *provided, however,* that if upon such examination any such information shall be shown to have been incorrect in any material respect, such cost shall be paid by the member of the Code which furnished such information.

SECTION 6.—Within 15 days after any member of the Code shall have become such member, it shall report to the Secretary, on forms to be provided by him for the purpose, the aggregate amount in tons of the products fabricated by such member and delivered by it for use in the United States and the aggregate amount in tons of the products the erection work on which was done by such member in the United States during each of the four

calendar years 1928 to 1931, inclusive. In making such report work sublet by such member shall not be reported by it but shall be reported by any member of the Code to which such work was sublet. As soon as practicable after receiving such reports, the Secretary shall compile and mail to each member of the Code a statement showing the respective average annual amounts in tons of the products fabricated by each member of the Code and delivered by it for use in the United States and of the products the erection work on which was done by each member of the Code in the United States during said four calendar years, which amounts shall reflect any adjustments made by the Board of Directors pursuant to the provisions of Section 5 of Article III of the Code. A copy of such statement shall also be sent to the Administrator.

SECTION 7.—The Board of Directors may in its descretion dispense with the requirement of any report or reports specified in Schedule D annexed hereto, if it shall determine that such report or reports are unnecessary.

SECTION 8.— Except as otherwise provided in the Code, the Secretary shall keep confidential all individual reports of members of the Code made under Section 1 of Schedule D of the Code.

ARTICLE X.

Liquidated Damages

SECTION 1.—Any violation of any provision of the Code by any member thereof shall constitute a violation of the Code by such member.

SECTION 2.—Except in cases for which liquidated damages are provided in the Code and in cases which shall give rise to actions in tort in favor of one or more members of the Code for damages suffered by it or them, the members of the Code upon the recommendation of the Board of Directors shall have power from time to time, by vote of members of the Code having the right to cast at least two-thirds of the votes that might be cast at a meeting of the members of the Code, if all the members of the Code were present thereat, to establish the amount of liquidated damages payable by any member of the Code upon the commission by such member of any act constituting an unfair practice under the Code and a list of the amounts so established shall from time to time be filed with the Secretary. Upon the commission by any member of the Code of any act constituting an unfair practice under the Code and for which liquidated damages are not provided in the Code or which does not give rise to an action in tort in favor of one or more members of the Code for damages suffered by it or them, such member shall become liable to pay to the Treasurer as an individual and not as treasurer of the Institute, in trust, liquidated damages in the amount at the time so established by members of the Code for such unfair practice and specified in the list then on file with the Secretary as aforesaid.

SECTION 3.—All amounts paid to or collected by the Treasurer for liquidated damages under this Article X or under any provision of Article IV or of Article VII of the Code shall be held and disposed of by him as part of the funds collected under the Code and each member of the Code not guilty of the unfair practice in respect of which any such amount shall have been paid or collected shall be credited with its *pro rata* share of such amount on account of any and all assessments (other than damages for violation of any provision of the Code) due or to become due from such member under the Code, or in the case of any excess, as shall be determined by the Board of Directors, such *pro rata* share to be computed on the same basis as the last previous assessment made against such member on account of the expenses of administering the Code as hereinbefore in Section 5 of Article VI provided. All rights of any person who shall at any time be the Treasurer in respect of any amounts which shall be payable to him because of the commission by any member of the Code of any act constituting an unfair practice under the Code, whether payable under the provisions of this Article X or under any other provision of the Code, shall pass to and become vested in his successor in office upon the appointment of such successor.

SECTION 4.—Each member of the Code by becoming such member agrees with every other member thereof that the Code constitutes a valid and binding contract by and among all members of the Code and that, in addition to all penalties and liabilities imposed by statute, any violation of any provision of the Code by any member thereof shall constitute a breach of such contract and shall subject the member guilty of such violation to liability for liquidated damages pursuant to the provisions of the Code. Each member of the Code by becoming such member thereby assigns, transfers and delivers to the Treasurer as an individual and not as treasurer of the Institute, in trust, all rights and causes of action whatsoever which shall thereafter accrue to such member under the Code for such liquidated damages by reason of any violation of the Code by any other member thereof, and thereby designates and appoints the Treasurer as such individual the true and lawful attorney-in-fact of such member to demand, sue for, collect and receipt for any and all amounts which shall be owing to such member in respect of any such right or cause of action, and to compromise, settle, satisfy and discharge any such right or cause of action, all in the name of such member or in the name of the Treasurer individually, as he shall elect.

SECTION 5.—Anything in the Code to the contrary notwithstanding, the Board of Directors by the affirmative vote of two-thirds of the whole Board may waive all or any part of any liability for liquidated damages imposed by or pursuant to any provision of the Code for any violation of any provision thereof, if in its discretion it shall decide that such violation was innocently made and/or that the collection of such damages will not to any material extent tend to effectuate the policy of Title I of the National Industrial Recovery Act.

ARTICLE XI.

General Provisions

SECTION 1.—Any notice, demand or request required or permitted to be given to or made upon any member of the Code shall be sufficiently given if mailed postage prepaid addressed to such member at the address of such member on file with the Secretary. A waiver in writing signed by any member of the Code of any such notice, demand or request and delivered to the Secretary shall be deemed to be the equivalent of a notice, demand or request duly given or made, whether or not such waiver was signed and delivered before the time when such notice, demand or request was required or permitted to be given or made.

SECTION 2.—Nothing contained in the Code shall be deemed to constitute the members of the Code partners for any purpose. None of the members of the Code shall be liable in any manner to anyone for any act of any other member of the Code or for any act of the Board of Directors, the Treasurer or the Secretary, or any committee, officer or employee appointed under the Code. None of the members of the Board of Directors or of any committee appointed under the Code, nor the Treasurer, nor the Secretary, nor any officer or employee appointed under the Code, shall be liable to anyone for any action or omission to act under the Code, except for his wilful misfeasance or nonfeasance. Nothing contained in the Code shall be deemed to confer upon anyone other than a member of the Code any right, claim or demand whatsoever not expressly provided by statute against any member of the Code or against any member of the Board of Directors or of any committee appointed under the Code or against the Treasurer or the Secretary or any officer or employee appointed under the Code.

SECTION 3.—As soon as members of the Industry which would, if then members of the Code, have the right to cast at least two-thirds of all the votes that might be cast at a meeting of the members of the Code, if all members of the Industry were then members of the Code and present at such meting, shall sign and deliver to the Secretary letters substantially in the form set forth in Schedule A annexed hereto, the Board of Directors shall submit the Code to the President pursuant to the provisions of Title I of the National Industrial Recovery Act, and, upon the approval of the Code by the President pursuant to the provisions of such Title I, it shall constitute a binding contract by and among the members of the Code and the provisions thereof shall become effective and shall be the standards of fair competition for the Industry on and after the eleventh day after the day on which it shall have been so approved; *subject, however,* to amendment or termination as hereinafter in Article XII provided and subject also to the provisions of Section 7 of this Article XI.

SECTION 4.—To the extent required or made possible by or under the provisions of Title I of the National Industrial Recovery Act the provisions of the Code shall apply to and be binding upon every member of the Industry, whether or not such member shall be a member of the Code; *provided, however,* that none of the provisions of the Code shall be deemed to apply to or be binding upon any person, firm, association or corporation engaged in the business of doing erection work in the United States who does not operate a plant or plants in the United States in the fabrication of products, or any of them, and who shall not have become a member of the Code as provided in Sections 2 and 3 of Article III thereof, except to the extent which shall be provided in any agreement which shall have been signed by such person, firm, association or corporation pursuant to the provisions of Section 8 or Section 9 of

Article IV of the Code. No member of the industry which shall not also be a member of the Code shall be entitled to vote at any meeting of members of the Code or to any other right, power or privilege provided in the Code for the members thereof.

SECTION 5.—Except to the extent that other specifications shall be prescribed by the purchaser, owner or contractor, each member of the Code shall conform to the Code of Standard Practice and Standard Specifications of the Institute in the fabrication of any product and/or any erection work thereon by such member.

SECTION 6.—The Board of Directors shall have power from time to time to interpret and construe the provisions of the Code, including, but without any limitation upon the foregoing, the power to determine what are products and what operators are included in the Industry within the meaning of those terms as they are used in the Code. Any interpretation or construction placed upon the Code by the Board of Directors and any action taken, or decision, rule or regulation made, by the Board of Directors under any provision of the Code shall be final and conclusive upon all members of the Code; *provided, however,* that anything in the Code to the contrary notwithstanding, the members of the Code may, at any meeting of such members by vote of such members having the right to cast at such meeting at least two-thirds of all the votes that might be cast at such meeting if all the members of the Code were present thereat, rescind or modify any such interpretation, construction, action, decision, rule or regulation.

SECTION 7.—The members of the Code recognize that pursuant to subsection (*b*) of Section 10 of the National Industrial Recovery Act, the President may from time to time cancel or modify any order, approval, license, rule or regulation issued under Title I of said Act.

SECTION 8.—The Secretary shall cause a copy of the Code as approved by the President to be mailed to each member of the Industry known to the Institute within five days after the approval of the Code by the President.

ARTICLE XII.

Amendments—Termination

SECTION 1.—The Code may be amended at any time in the manner hereinafter in this Section 1 provided. Subject as provided in Section 5 of Article VII hereof, the changing of any schedule hereto or the addition hereto of any new schedule shall constitute an amendment of the Code. Amendments may be proposed by the Board of Directors by vote of the majority of the members thereof at the time in office or by members of the Code having the right to cast at least 50% of all the votes that might be cast at a meeting of the members of the Code if all of such members were present thereat. Each amendment so proposed shall be submitted to a meeting of the members of the Code which shall be called for such purpose upon notice given in accordance with the provisions of Section 4 of Article III and Section 1 of Article XI of the Code. If at such meeting members of the Code having the right to cast at least two-thirds of all the votes that might be cast at such meeting, if all the members of the Code were present thereat, shall vote in favor of the adoption of such amendment, such amendment shall be submitted by the Board of Directors to the President for approval, if approval thereof by him shall then be required by law. Every such amendment shall take effect as a part of the Code upon the adoption thereof by the members of the Code as above provided and the approval thereof by the President, if approval thereof by him shall be required as aforesaid.

SECTION 2.—The Code shall continue in effect for a period of 90 days after the effective date thereof, in order to afford to the President an opportunity to determine upon the recommendations of the representatives of the Administration, for which provision has heretofore been made in Article VI, whether its provisions will effectuate the purposes of Title I of the National Industrial Recovery Act, as further defined in said Article VI, subject, however, to amendment at any time as hereinbefore provided, and also subject to the reserved power of the President to cancel or modify his approval thereof. The Code shall continue in effect after the expiration of said period of 90 days in the absence of the exercise of such reserved power on the part of the President, or in the absence of the exercise by the members of the Code of the power which they hereby reserve to terminate the Code at any time after the expiration of said period of 90 days by the same action by them as is above provided for the amendment thereof; *provided, however,* that if and when Title I of the National Industrial Recovery Act shall cease to be in effect the Code may be terminated, at a meeting of members of the Code called for the purpose upon notice given in accordance with the provisions of Section 4 of Article III and of Section 1 of Article XI of the Code, by the vote of members thereof having the right to cast a majority of all the votes that might be cast at such meeting if all the members of the Code were present thereat and such a majority shall constitute a quorum for such purpose. When so terminated all obligations and liabilities under the Code shall cease, except those for unpaid assessments theretofore made in accordance with the provisions of the Code and those for liquidated damages theretofore accrued under any provision of the Code.

September 5, 1933.

SCHEDULE A.

Form of Letter of Assent to the Code

To the Secretary of
American Institute of Steel Construction, Inc.,
200 Madison Avenue,
New York, N. Y.

Dear Sir:

The undersigned, desiring to become a member of the Code of Fair Competition of the Structural Steel and Iron Fabricating Industry, a copy of which is annexed hereto marked Annex A, hereby assents to all of the provisions of said Code (hereinafter referred to as the Code), and, effective as of the date on which the Code shall have been approved by the President of the United States of America as therein provided, or as of the date on which this letter shall have been delivered, if delivery thereof shall have been made subsequent to the date on which the Code shall have been approved by said President as aforesaid, by the signing and delivery of this letter becomes a member of the Code and effective as aforesaid hereby agrees with every person, firm, association and corporation who shall then be or thereafter become a member of the Code that the Code shall constitute a valid and binding contract between the undersigned and all such other members.

Effective as aforesaid, pursuant to Section 4 of Article X of said Code, the undersigned (*a*) hereby assigns, transfers and delivers to the Treasurer under the Code, as an individual and not as treasurer of American Institute of Steel Construction, Inc., in trust, all rights and causes of action whatsoever hereafter accruing to the undersigned under the Code for liquidated damages by reason of any violation thereof by anyone, and (*b*) hereby designates and appoints said Treasurer as such individual the true and lawful attorney-in-fact of the undersigned, to demand, sue for, collect and receipt for any and all amounts which shall be owing to the undersigned in respect of any such right or cause of action, and to compromise, settle, satisfy and discharge any such right or cause of action, all in the name of the undersigned or in the name of said Treasurer, as said Treasurer shall elect.

For all purposes of Section 1 of Article XI of the Code the address of the undersigned, until it shall file with the Secretary of American Institute of Steel Construction, Inc., written notice of a change of such address, shall be as set forth at the foot of this letter.

Very truly yours,

Address:

SCHEDULE B.

Description of Districts

For the purposes of the Code the seven districts hereinafter described are established:

District No. 1—comprising the States of Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, Delaware and Maryland and the District of Columbia, and that portion of the State of Pennsylvania east of a line drawn north and south through said State and touching the eastern boundary of the City of Altoona.

District No. 2—comprising the States of Ohio and West Virginia and the lower peninsula of the State of Michigan; that portion of the State of Pennsylvania west of a line drawn north and south through said State and touching the eastern boundary of the City of Altoona; and those portions of the States of Indiana and Kentucky east of a line drawn north and south through said States and touching the eastern boundary of the City of Indianapolis.

District No. 3—comprising the states of Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi and Tennessee, and that portion of the State of Louisiana east of a line drawn north and south through said State 25 miles west of the western boundary of the City of New Orleans.

District No. 4—comprising the States of Montana, North Dakota, South Dakota, Minnesota, Wisconsin, Iowa and Illinois and the upper peninsula of the State of Michigan; that portion of the State of Missouri east of a line drawn north and south through said State touching the eastern boundary of the City of Boonville; and those portions of the States of Indiana and Kentucky

west of the aforesaid line drawn north and south through said States touching the eastern boundary of the City of Indianapolis.

District No. 5—comprising the States of Wyoming, Utah, Colorado, Nebraska, Kansas and Oklahoma and that portion of the State of Missouri west of the aforesaid line drawn north and south through said State touching the eastern boundary of the City of Boonville.

District No. 6—comprising the States of Arkansas, Texas and New Mexico and that portion of the State of Louisiana west of the aforesaid line drawn north and south through said State 25 miles west of the western boundary of the City of New Orleans.

District No. 7—comprising the States of Washington, Oregon, Idaho, California, Nevada and Arizona.

SCHEDULE C.

Minimum Rates of Pay

I. *Minimum Rates of Pay for Common Labor in Plants.*

The minimum rates of pay per hour hereinafter in this Subdivision I of this Schedule C specified for the cities of New York, Chicago and Pittsburgh shall apply to all plants located within a radius of 30 miles from the respective City Halls of such cities and the minimum rates of pay per hour hereinafter in this Subdivision I of this Schedule C specified for any other city shall apply to all plants located within a radius of 20 miles from the City Hall of such city.

DISTRICT NO. 1

	Minimum rate of pay per hour for common labor
New York	40¢
Buffalo, Rochester, Syracuse, Albany, and Utica, N. Y. and all localities in the New England States	38¢
All other localities in District No. 1	35¢

DISTRICT NO. 2

Pittsburgh, Youngstown, Cleveland, Akron, Detroit, and Wheeling, W. Va.	40¢
Toledo, Canton, Dayton and Massillon, Ohio; Flint and Lansing, Mich.	37¢
All other localities in District No. 2	35¢

DISTRICT NO. 3

All localities in the States of Virginia and North Carolina and that portion of the State of Louisiana in District No. 3	30¢
All other localities in District No. 3	27¢

DISTRICT NO. 4

Locality	Minimum rate of pay per hour for common labor
Chicago	40¢
Milwaukee, Wis., Minneapolis and St. Paul, Minn., and St. Louis,	37¢
All other localities in District No. 4	35¢

DISTRICT NO. 5

Kansas City, Mo., Denver, Colo., Ok'ahoma City and Tulsa, Okla.	37¢
All other localities in District No. 5	35¢

DISTRICT NO. 6

Dallas, Orange, Houston, Beaumont and San Antonio, Tex...	35¢
All other localities in District No. 6	33¢

DISTRICT NO. 7

Seattle, Wash.	38¢
San Francisco	37¢
All other localities in District No. 7	35¢

II. *Minimum Rates of Pay for Labor Employed in Erection Work*

The minimum rates of pay per hour hereinafter in this Subdivision II of this Schedule C specified for any city shall apply to all erection work within the city limits of such city. The respective rates of pay per hour for all employees, other than first-class bridgemen and common laborers, employed on any job of erection work in any locality hereinafter in this Subdivision II specified on which ten or more employees shall be employed by any member of the Code shall be such that the minimum monthly average rate of pay per hour, as defined in paragraph (e) of Section 5 of Article IV of the Code, for all employees employed on such job by such member (except the foremen and the resident engineer in charge of the job at the place of such work) shall be the percentage hereinafter in this Subdivision II specified for such locality of the minimum rate of pay per hour for such first-class bridgemen hereinafter in this Subdivision II specified for such locality.

DISTRICT NO. 1

Locality	Minimum rate of pay per hour for First Class Bridgemen	Common Labor
Boston	$1.00	55¢
Springfield, Mass.	1.00	55¢
Worcester, Mass	1.00	55¢
Hartford, Conn.	1.00	55¢
New Haven, Conn.	1.00	55¢
Albany, N. Y.	1.00	55¢
Buffalo	1.00	55¢
New York	1.45	60¢
Rochester, N. Y.	1.00	55¢
Syracuse, N. Y.	1.00	55¢
Utica, N. Y.	1.00	55¢
All localities on Long Island, N.Y. (outside of the City of New York) and in Westchester County, N. Y.	1.25	60¢
Philadelphia	1.00	55¢
Baltimore	1.00	55¢
Newark, N. J.	1.25	60¢
Jersey City, N. J.	1.25	60¢
Washington	1.25	60¢
All other localities in District No. 1	.90	50¢
Specified percentage for all localities in District No. 1		80%

DISTRICT NO. 2

Locality	Minimum rate of pay per hour for First-class Bridgemen	Common Labor
Detroit	$1.00	55¢
Louisville, Ky.	.90	50¢
Cincinnati	1.00	55¢
Cleveland	1.10	60¢
Columbus, Ohio	1.00	55¢
Pittsburgh	1.10	60¢
Charleston, W. Va.	.85	45¢
Wheeling, W. Va.	1.10	60¢
All localities in the State of West Virginia outside of Charleston and Wheeling	.75	35¢
All other localities in District No. 2	.90	50¢
Specified percentage for all localities in District No. 2		80%

DISTRICT NO. 3

Locality	Minimum rate of pay per hour for First-class Bridgemen	Common Labor
Miami, Fla.	$0.85	35¢
New Orleans, La.	.85	35¢
All other localities in District No. 3	.75	35¢
Specified percentage for all localities in District No. 3		75%

DISTRICT NO. 4

Locality	Minimum rate of pay per hour for First-class Bridgemen	Common Labor
Chicago	$1.10	60¢
St. Louis	1.10	60¢
All localities in the States of Wisconsin and Illinois outside of Chicago, and all localities in those parts of the States of Indiana and Kentucky included in District No. 4	.90	50¢
All other localities in District No. 4	.85	45¢
Specified percentage for all localities in District No. 4		80%

DISTRICT NO. 5

Locality	Minimum rate of pay per hour for First-class Bridgemen	Common Labor
Kansas City, Mo.	$1.00	55¢
Denver, Colo.	1.00	55¢
All other localities in District No. 5	.85	.45¢
Specified percentage for all localities in District No. 5		80%

DISTRICT NO. 6

Locality	Minimum rate of pay per hour for First-class Bridgemen	Common Labor
All localities in the State of Arkansas and that part of the State of Louisiana which is included in District No. 6	$0.75	35¢
All localities in the States of Texas and New Mexico	.80	40¢
Specified percentage for all localities in the State of Arkansas and that part of the State of Louisiana which is included in District No. 6	75%	
Specified percentage for all other localities in such District	80%	

DISTRICT NO. 7

Locality	Minimum rate of pay per hour for First-class Bridgemen	Common Labor
Seattle, Wash	$1.00	55¢
Oakland, Cal.	1.10	60¢
San Francisco	1.10	60¢
Los Angeles	1.00	55¢
Portland, Ore.	1.00	55¢
All other localities in District No. 7	.85	45¢
Specified percentage for all localities in District No. 7	80%	

SCHEDULE D.

Concerning Reports and Statistics

SECTION 1.—The monthly reports required to be filed with the Secretary by members of the Code shall include the following information:

(*a*) An Individual Contract Report showing separately each contract for the sale of any product or products and/or the erection work thereon in an amount exceeding 25 tons in the aggregate taken during the preceding calendar month, with a brief description and the location of the job, the owner's name, the architect's or engineer's name, the weight, the selling price, all itemized as per the bid, including materials and work outside the Industry, and also the specified delivery dates. The weights shall be totaled for such calendar month and to date for the current calendar year. This report shall be divided according to the districts (as described in Schedule B to the Code) in which the jobs are located, and sub-totals shall be given of the tonnage sold in each of the districts for such calendar month and to date for the current calendar year. When the weight of a job sold is uncertain an approximate weight shall be given and noted as approximate, and a supplemental report shall be filed giving the correct weight as soon as the information shall be available. Contracts for 25 tons or less shall be lumped under each of the districts as "Miscellaneous Contracts," giving the total weights only; but in case of complaint the Board of Directors may require a detailed report on any such contract.

(*b*) An Individual Production Report showing the tonnage fabricated for delivery into each of the districts during the preceding calendar month and to date for the current calendar year.

(*c*) An Individual Shipment Report showing the tonnage shipped into each of the districts during the preceding calendar month and to date for the current year.

(*d*) An Individual Shop Schedule showing the tonnage scheduled for fabrication in each of the succeeding calendar months for delivery into each of the districts.

(*e*) An Individual Erection Report showing the tonnage of products the erection work on which was done in each of the districts during the preceding calendar month and to date for the current calendar year.

(*f*) An Individual Proposal Report showing separately for each bid for the delivery of, and/or erection work on, more than 25 tons of any product or products made during the preceding calendar month, the name and location of the job, the owner's name, the architect's or engineer's name and the estimated weight of such product or products.

(*g*) A Labor Report in such form and containing such information in respect of hours of labor and rates of pay as shall be required by the Board of Directors to effectuate the purpose of the Code.

SECTION 2.—The monthly reports to be mailed to members of the Code by the Secretary shall include the following:

(*a*) A Consolidated Report showing the total tonnage sold for each of the districts during the preceding calendar month and for the current calendar year to date with totals for the United States.

(*b*) A Consolidated Production Report showing the total tonnage fabricated for delivery into each of the districts during the preceding calendar month and for the current calendar year to date.

(*c*) A Consolidated Shipment Report showing the total tonnage shipped into each of the districts during the preceding calendar month and for the current calendar year to date.

(*d*) A Consolidated Shop Schedule showing the total tonnage scheduled for fabrication in each of the succeeding calendar months for delivery into each of the districts.

(*e*) A Consolidated Erection Report showing the total tonnage of products the erection work on which shall have been done in each district during the preceding calendar month and for the current calendar year to date.

(*f*) A Report showing the total tonnage sold during the preceding calendar month and for the current calendar year to date by each member of the Code and showing in such form as the Board of Directors shall approve the amounts thereof sold for future delivery.

(*g*) Each of the reports hereinbefore in paragraphs (*a*) to (*e*) inclusive of this Section 2 provided for shall also show by current and cumulative percentages how each of the districts compares with the United States as a whole.

SCHEDULE E.

Standard Terms of Payment

The following are the standard terms of payment for products and/or erection work:

1. All payments shall be made in funds current at par in the city or town in which the member of the Code selling the product and/or doing the erection work thereon is located.

2. In the case of any contract for the sale of any product or products the erection work on which is to be done by the member of the Code selling such products, the purchaser shall on the 10th day of each month pay an amount at least equal to 90% of the contract value of all products shipped, stored or ready for shipment and 90% of the contract value of the erection work performed, during the preceding calendar month, and shall pay the remainder thereof within 10 days after the completion of the work under such contract; *provided, however*, that the aggregate amount retained by the purchaser shall not at any time exceed twice the contract value of the product or products then remaining to be delivered and/or the erection work then remaining to be done under such contract.

3. When the erection work on any product sold is not to be done by the member of the Code selling such product payment of the contract value of each shipment of such product shall be made on the 10th day of the month following the month in which such shipment was made.

4. Unless otherwise agreed with the purchaser, whenever any product is sold delivered to the purchaser or freight charges thereon are allowed to the purchaser thereof, such purchaser shall pay such freight charges and the member of the Code selling such product shall accept receipted freight bills therefor as cash to be applied on any payments falling due at or after the delivery of the product or products covered by such freight bills.

5. All payments for any product or products and/or erection work shall be deemed to be due and shall be paid at the times specified in the contract therefor regardless of the time of final settlement for any other work and, in the case of any contract with a general contractor, payment for any product or products and/or for the erection work thereon shall not be delayed by such general contractor pending his receipt of payments or estimates of payments from the owner of the structure for which any such product was used or on which any such erection work was done.

6. All overdue payments shall bear interest at the maximum applicable legal rate.

SCHEDULE F.

List of Unfair Practices

For all purposes of the Code the following described acts shall constitute unfair practices:

A.—Making or promsing to any purchaser or prospective purchaser of any product or to the owner of any structure or any contractor or prospective contractor for work on such structure, or to any officer, employee, agent or representative of any such purchaser, prospective purchaser, owner, contractor or prospective contractor, any bribe, gratuity, gift or other payment or remuneration, directly or indirectly.

B.—Procuring, otherwise than with the consent of any member of the Code, any information concerning the business of such member which is properly regarded by it as a trade secret or confidential within its organization, other than information relating to a violation of any provision of the Code.

C.—Imitating or simulating any mark or brand used by any other member of the Code without the consent of such member.

D.—Using or substituting any secondhand material or any material inferior in quantity, quality or workmanship to that specified in the contract for the product or work for which such material is used, without the consent of the other party or parties to such contract, or using or substituting any material or any method of fabrication or erection not in accord with any applicable law, rule or regulation of any governmental authority or, except as may be otherwise required by any such law, rule or regulation, with the Standard Specifications and Code of Standard Practice of the Institute as at the time in effect.

E.—Paying or allowing to any purchaser, owner or contractor in connection with the sale of any product and/or the erection work thereon any rebate, commission, credit, discount, adjustment or similar concession other than as shall be permitted under the Code and specified in the contract for such sale and/or erection work.

F.—Disseminating, publishing or circulating any false or misleading information relative to any product or work or the price for any product or work of any member of the Code, or the credit standing of any member thereof or the ability of any member thereof to perform any work, or to the conditions of employment among the employees of any member thereof.

G.—Including or attempting to induce by any means any party to a contract with a member of the Code to violate such contract.

H.—Aiding or abetting any person, firm, association or corporation in any unfair practice.

I.—Making any sale, or contract for the sale of any product or for any work, under any description which does not fully describe such product or work in terms customarily used in the Industry or using or substituting any material superior in quality to that specified by the purchaser

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Industrial Confidence Wavers as Labor Fails to Do Its Part

By G. L. LACHER
Managing Editor, The Iron Age

OUR memories are short. Only a few moths ago we faced industrial stagnation. Relentless liquidation, forced by foreign gold withdrawals and domestic hoarding, had steadily driven down prices, wages, profits and employment, finally closing all the banks of the country. Confidence, the sine qua non of business enterprise, had been destroyed. Fear held sway throughout the land.

At that dark moment, the new President, in one bold stroke, cut the Gordian knot of financial paralysis by suspending gold payments and prohibiting hoarding. The response was immediate. With the fear of foreign gold raids definitely removed and with the return of hoarded money to our banks, hope revived, commodity buying picked up and securities prices swung sharply upward. The new President was hailed as a deliverer, and deservedly so. The American people ceased to worry about their very existence and again loosened purse strings that had long remained tightly tied.

The restoration of confidence brought a marked revival in demand for consumer goods. Automobile production made a decided comeback. Activity increased in numerous other lines; freight car loadings mounted. And there were strong hopes that a marked revival in the demand for capital goods would follow as a natural sequence.

Demand for Producer Goods Fails to Revive

But the market for durable goods has remained disappointingly slow. And why? The obvious answer is that new uncertainties have been introduced into our economic situation which have undermined business confidence. Capital is notoriously timid and persists in remaining idle until it regains faith in the future. And it is useless to rail against this characteristic of capital. It is a condition that must be faced so long as we retain a capitalistic form of economy.

The new uncertainties besetting American industry have nothing to do with statistics and even less with the fluctuations of dollar exchange. American business men have long since learned to discount statistical charts as indicators of the future. And as to dollar exchange, they know that they can ignore it if our immense domestic market can be revived. They realize that a return to something approaching normal business volume in this country would yield the revenues needed to balance the Government's budget and thereby restore the strength of the dollar as nothing else can.

Uncertainty of Costs Disturbs Industry

What disturbs American business, under the New Deal, is whether it can break even. This question is still a matter of the utmost concern to every private enterprise, although easily overlooked by Government officials accustomed to appropriate from public revenues or by learned academicians whose pay is insured by endowments. Industrial managements have no one to fall back upon but themselves. Unless they can sell their goods at a profit, they are lost. They are not unwilling to take risks—all business involves risk. But they cannot be blamed for renewed caution if the risks they are called upon to take are unreasonable.

American business, it will be recalled, responded sympathetically to the National Recovery program when it was first launched. And almost without exception, industries have cheerfully increased wages and reduced working hours in compliance with the provisions of the recovery act. The steel industry raised wages 15 per cent on July 15, more than a month before its code was accepted and signed by the President. This increase in payroll expenditures, amounting to $5,000,000 a month, was put into effect at a time when the industry as a whole was still piling up losses. Other industries have similarly put into effect wage advances before their business justified the increases.

One would think that American industry had done its part. But no, it must also submit to the unionization of its plants, or at least face a struggle over that issue. Organized labor, by insisting on its own interpretation of Section 7-a of the Industrial Recovery Act, is acting as if the main purpose of the legislation were not industrial recovery, but rather industrial subjection to the American Federation of Labor. And at a time when industrial peace is indispensable to promote business revival, this country is suffering from the largest number of strikes in years. Only recently an official in the National Recovery Administration, who is also head of the United Mine Workers, sanctioned a strike in steel company coal mines. Presumably his right hand did not know what his left hand was doing.

Counting the Chickens Before the Eggs are Laid

Greed for power is a human characteristic, but it should be curbed when it runs counter to public interest. Only a few months ago, the average man regarded himself fortunate if he had a job. Today many workingmen are being misled by professional agitators into believing that there is no limit to the demands that can be made on industry. Before the recovery chickens are hatched—yes, even before the eggs are laid—they are counting the fowls that they will put in their pots.

"A chicken in every pot" would please no one more than the American manufacturer. He believes in high mass purchasing power. But he knows that recovery will not come unless his revenues exceed his costs. And he knows that recovery is incompatible alike with prolonged industrial strife and with meek acceptance of excessive demands. He has learned from bitter experience that the closed shop means reduced efficiency, chronic disturbance of organization morale and, in many instances, outright subjection to union racketeering. With a highly uncertain labor problem facing him, his future costs defy all calculations. He is by no means sure that he can continue to operate, let alone make expenditures for needed equipment and machinery. And he deserves to be heard at Washington when he says that he has done his part and that it is now high time that organized labor do likewise.

THE NEWS OF THIS WEEK

Urges Relief for Machinery Industries As Code Hearings Begin for Many Groups

GENERAL business can only reach sizable proportions when the capital goods or machinery industry of the United States has been aided in reaching up from its present depths, according to John W. O'Leary, president of the Machinery and Allied Products Institute, in his testimony before Deputy Administrator Malcolm Muir of the NRA on Sept. 5. Mr. O'Leary's appeal for prompt aid for the skilled factory personnel employed in the manufacture of capital goods was offered as he urged approval of the first three machinery codes submitted to the Administration. These three codes, which are the forerunners of others to be submitted by interests allied with the Machinery and Allied Products Institute were those of the Compressed Air Institute, the Hydraulic Institute and the Heat Exchange Institute.

"Contrary to general opinion," said Mr. O'Leary, "the economic troubles of the United States have not been caused so much by consumer shrinkage as by the almost total paralysis of the capital goods industries of the country. Reliable figures show that demand for consumption goods, those the ordinary consumer uses daily, has dropped only about 10 per cent since the depression. On the other hand demand for machinery, locomotives, equipment and other products of the capital goods industries has slumped more than 80 per cent. The result has been disastrous, particularly among those higher-priced categories of factory workers who in the past have been our best buyers and spenders.

"It is evident that if we are to have any new springboard toward recovery we can only look to the industries that have the greatest distance to come back.

"In submitting the three codes under consideration today we are thoroughly in sympathy with the position of the Administration that overproduction is dangerous and should be avoided. Yet we feel confident that after so many years of inactivity in most of our American industries and factories, there does exist an acute need for machinery replacement because of obsolescence, depreciation and other reasons.

"The railroads offer a splendid example. For several years now our locomotive builders, companies that buy great quantities of raw and fabricated materials and who employ thousands of high-waged workers have been at a standstill. It is shown that their output has declined 98 per cent from normal. In like fashion the demand for new freight cars has only been 8 per cent of normal. When it is figured that these are only two branches of capital goods activity in the United States that in 1929 did a business better than 15 billion dollars, the importance of encouragement of durable goods industries and sympathetic consideration of their position is evident.

"As the current volume of industrial production turns upward there will be an insistent demand for capital goods. A portion of this demand could be anticipated advantageously at this time if conditions as to cost and capital are made sufficiently favorable.

"The machinery used in American industry should be replaced every 10 to 20 years, depending upon its type and character of service. Yet we find that on top of the heavy installations of machinery made during the war, most of which is now totally out of date, the obsolescence, which must be considered and corrected if President Roosevelt's program is to succeed, has been acutely accentuated by the unusual conditions since 1929.

"The codes submitted under the guidance of the Machinery and Allied Products Institute have not been prepared with any thought that this is the time for the American business man to increase the volume of his activities, but it is vital for him to modernize his equipment so that once again he will have adequate facilities for carrying on his normal volume of business and improving the quality of his products to a basis where he will be able to pay his workers the wage which all agree now is one of the basic essentials of any lasting recovery.

"Every major economic collapse in this country has followed marked letdown in demands for durable goods. Recovery has come, in turn, when other industries, particularly those of the everyday consumption variety, have begun to show profits and have finally been enabled to spend money for replacements, renewals and modernization of plant equipment. In other words, final recovery and recreation of a good capital goods market have gone hand in hand."

Stipulations are contained in all codes submitted by the Machinery and Allied Products Institute declaring that employees shall be selected, retained or advanced on the basis of individual merit, without regard to their affiliation or non-affiliation with any labor organization, or with any other lawful organization. The industry has recognized the right of the employees of any employer, is also set forth, to bargain collectively with such employer, through representation chosen by such employees from among themselves, without interference, coercion or restraint from their employer or from any one.

Changes Made in Steel Casting Code

THE code of competition for the steel casting industry, as submitted to the Administrator and as published in THE IRON AGE of Aug. 17, p. 31, was amended at the morning hearing on Sept. 7, as follows:

Section 3 of Article I of the code as originally submitted is replaced by the following paragraph:

"The term *the Industry* means and

includes the business of producing and/or selling steel castings in the United States, except as produced and/or sold as a part of the products, including finished parts thereof, of an owning or an affiliated company, but not sold in the open market as castings in competition with similar castings produced by other members of the Industry."

An additional section, 13, is added to Article I, reading as follows:

"A company, in its relation to another company, is defined as an *affiliated company* when either one has, directly or indirectly, a substantial interest in the other, or when a third company has, directly or indirectly, a substantial stock interest in both."

Non-Ferrous Foundry Code Labor Provisions Upheld

The code of fair competition filed by the Non-Ferrous Foundry Association on Aug. 24 has been reviewed by the President's recovery administration, according to Sam Tour, executive secretary, and the labor provisions have been accepted in substitution for the President's blanket agreement. Accordingly, those participating in the non-ferrous code through membership in the association are entitled to modifications as follows:

For paragraph 2 of President's Agreement—"Employees (other than factory or mechanical workers or artisans, outside salesmen and watchmen) shall not be employed for more than a forty (40) hour week averaged over a four (4) weeks period; providing, however, that such employees shall not be employed for more than forty-eight (48) hours in any week.

For paragraph 3 of President's Agreement—No factory or mechanical worker or artisan (other than technical workers now receiving $35.00 or more per week) shall be employed for more than a forty (40) hour week averaged over an eight (8) weeks period; providing further that such employees shall not be employed for more than forty-eight (48) hours in any week, nor more than six (6) days in any one week, nor more than ten (10) hours in any one day, and time worked over eight (8) hours per day shall be considered over-time, provided further that in the case of engineers, firemen, electricians and repair and maintenance crews a 10 per cent tolerance shall be allowed.

For paragraph 6 of President's Agreement—No factory or mechancial worker or artisan in the North shall be paid less than thirty-five (35) cents per hour for male employees and thirty (30) cents per hour for female employees, nor less than thirty (30) cents per hour in the South for both male and female employees. Learners and apprentices during one period of sixty (60) days apprenticeship may be paid not less than 80 per cent of the minimum wage and shall not comprise more than five per cent (5 per cent) of the total employees of each employer. Where female employees do substantially the same work and perform substantially the same duties as male employees, they shall be paid the same rate of pay as male employees are paid for doing such work or performing such duty.

This paragraph establishes a guaranteed minimum rate of pay regardless of whether the employee is compensated on the basis of a time rate or on piece work performance.

The South is hereby defined as comprising North Carolina, South Carolina, Georgia, Florida, Alabama, Tennessee, Arkansas, Mississippi, Louisiana, Oklahoma and Texas."

Plans Completed for National Metal Congress in Detroit, Oct. 2 to 6

NEARLY 60 technical papers recording this year's achievements in theoretical and practical metallurgy; elaborate exhibits by producers of ferrous and non-ferrous metals and manufacturers of all types of equipment for treating, fabrication and finishing, and a schedule of plant inspection trips covering Detroit's most interesting industrial plants are scheduled for the fifteenth annual National Metal Congress and Exposition at Detroit from Oct. 2 to 6.

Five national technical groups are cooperating with the American Society for Steel Treating in the National Metal Congress and each will sponsor separate programs. The A.S.S.T. will hold ten sessions during the week, presenting 30 papers. The Institute of Metals and Iron and Steel division of American Institute of Mining and Metallurgical Engineers are holding four technical sessions, at which 14 papers will be presented. The American Welding Society has scheduled 29 papers on its 7 sessions. The Wire Association is planning an extensive 3-day program for its members which will include a business meeting, technical sessions and informal gatherings. The American Society of Mechanical Engineers has arranged a session which will consist of two papers and a trip through the plant of the Kelvinator Corpn.

Detroit's Convention Hall will be the scene of the National Metal Exposition, for which exhibitors will occupy 50 per cent more space than was used in the 1932 show.

Among these plants to which visits have been arranged are: Barnes-Gibson-Raymond, Inc., Bohn Aluminum & Brass Co., Bower Roller Bearing Co., Chevrolet Motor Co., Climax Molybdenum Co., Detroit Edison Co., Detroit Seamless Steel Tubes Co., Detroit Steel Corpn., Dodge Bros. Corpn., Ford Motor Co., Gemmer Mfg. Co., General Motors Research Laboratories, Great Lakes Steel Corpn., Hupp Motor Car Co., Kelvinator Corpn., Michigan Steel Corpn., Michigan Steel Castings Co., Packard Motor Car Co., Timken Detroit Axle Co., and General Motors Proving Ground.

The 1933 Campbell Memorial Lecture will be given Wednesday morning, Oct. 4, by H. J. French, in charge of alloy steel and iron development for International Nickel Co. Its title is "Fatigue and Hardening of Steels."

The tentative program of the Institute of Metals and Iron and Steel Division, American Institute of Mining and Metallurgical Engineers is as follows: Wednesday, Oct. 4, morning —Registration. Afternoon — Joint session, Iron and Steel and Institute of Metals Divisions. 2 p. m.—Relation Between the Plastic Deformation in Deep Drawing and the Tensile Properties of Various Materials, by M. H. Sommer. Studies on Creep of Metals Using a Modified Rohn Test, by C. R. Austin and J. R. Gier. Evening — 6.30 p.m. — Joint Dinner of Both Divisions. Speaker, A. B. Kinzel, Union Carbide and Carbon Research Laboratories. Subject: "Silicon."

Thursday, Oct. 5—Morning, 9.30 a. m. — Institute of Metals Division. Round Table on Non-Ferrous Metals in the Automotive Industry. Following topics covered: 1. Economies resulting from the use of non-ferrous metals in automotive parts. 2. Economies resulting from the use of non-ferrous cutting tools. Discussion by Dr. Zay Jeffries. 3. The automotive uses of alloys possessing special expansion characteristics. Discussion by Robert G. Waltenberg. 4. Bearings, including solid, bronze, and steel-backed and bearings made from pressed metal powders. 5. Finishing non-ferrous automotive parts. 10 a.m. —Iron and Steel division technical session. X-Ray Study of the Infusion of Chromium into Iron, by Lawrence C. Hicks. Titanium and Columbium in Plain High Chromium Steel, by F. M. Becket and Russell Franks. Improvements in Vacuum Fusion Method for Determination of Gases in Metals, by Lewis Reeve. 12 m.—Luncheon, executive committee, Institute of Metals Division, Parlor A. Luncheon, executive committee, Iron and Steel division, Parlor C., Hotel Statler. Afternoon—Institute of Metals Technical Session, 2 p. m. Notes on the Cadmium-Nickel System, by C. E. Swartz and Albert J. Phillips.

Thursday afternoon—Copper Embrittlement, III, by L. L. Wyman. A Table of the Rapid Interconversion of Atomic and Weight Percentages, by Cyril S. Smith. Meeting of subcommittee and advisory council on the terminology of impurities in metals. Open to all interested.

Scrap Industry Labor Clause Is Approved

THE Institute of Scrap Iron & Steel has announced that over 4000 wholesale, or carload, shippers of secondary materials in the United States will fly the Blue Eagle this week, as a result of approval by General Johnson of modified labor provisions of the various branches of the secondary raw materials industry. Pending the public hearings and final approval of the various codes submitted by the national associations in the industry, the modified President's Reemployment

Agreement will affect approximately 100,000 employees working in the scrap yards and warehouses of the industry, and about 200,000 individual collectors throughout the country who are connected with the wholesalers as sources of supply.

The maximum hours of work per week has been set at 40 for the entire industry. A tolerance of 4 to 8 hr. per week is permitted for certain special groups of workers. The maximum wage per hr. ranges from 22½c. in the South for female employees to 40c. in the North for male workers. The wage also depends upon the commodity handled.

The Institute estimates that the annual volume of business for the various branches of its industry totals $1,000,000,000, including scrap iron, metal, wool stock, cotton rags, waste paper, wiping cloth, scrap rubber and used textile bags. It is also estimated that over 10,000 employees will have to be added to the payroll of the secondary industry as the result of the new labor provisions.

Light Weight Box Car Developed by A. R. A.

WITH a view toward achieving a still further reduction in the weight of freight cars without any decrease in capacity or strength and at a reduced cost of construction, the American Railway Association has had built five sample all-steel 50-ton capacity box cars which are nearly 4000 pounds lighter in weight than cars of the same capacity previously constructed.

Designs for these cars were prepared in conjunction with car manufacturers, by a committee on car construction of the association which has been studying the question for some years. By merely changing trucks, these cars can be converted from a 50-ton to a 40-ton capacity car. The cars have been turned over to the association, which, in cooperation with the various railroads, will put them through rigid tests in order to determine whether they have any possible weaknesses and whether they will hold up under present day railroad operation.

The reduction in weight without sacrificing capacity or strength has been brought about by a better arrangement of the steel frame work of the car. The cars are designed to the widest width and height that can be freely interchanged between the various railroads. The new cars are 40-ft. 6-in. long, 8-ft. 9⅛-in. wide, and 9-ft. 4-in. high inside.

The International Gas Conference and Fifteenth Annual Convention of the America Gas Association will be held at Chicago, Sept. 25 to 29.

British Raw Steel in Demand—Finishing Mills Moderately Busy

LONDON, ENGLAND, Sept. 12 (*By Cable*).—British home demand for pig iron is well sustained and additional furnaces are likely to be lighted. Producers of raw steel are quite busy, but finishing mills are more moderately booked, except for ship steel.

Tin plates are quiet, so far as fresh demand is concerned, but unfilled orders aggregate some 3,000,000 basis boxes and tin plate mill production is again at 70 per cent of capacity.

British works have already commenced rolling and shipping in connection with the 22,000 tons of galvanized sheets which formed the British share of the Argentine locust barrier order which was let last week.

Continental steel works report a better demand and increased bookings from the Far East. But syndicate c.i.f. prices are causing much dissatisfaction as it is believed that concessions are being offered. There is considerable agitation for a return to the old f.o.b. basis.

British demand for Continental steel is poor owing to the fluctuation in exchange and also to delays in acceptance of orders by syndicates. An additional handicap is the refusal of British customs to pass syndicate invoices because of the suspicion of dumping. At present, works invoices only are accepted.

Continental Wire Rod Cartel has made no changes either in quotas or prices for the fourth quarter.

Italian steel makers have formed a cartel to regulate production, sales and prices during the next five years.

South Africa has ordered 12,000 additional tons of rails from Canada.

British Prices, f.o.b. United Kingdom Ports

Per Gross Ton

Ferromanganese, export	£8
Billets, open hrth.	£5 to £5 12s. 6d.
Black sheets, Japanese specifications	£11
Tin plate, per base box	16s. 6d. to 17s.
Steel bars, open-hearth	£7 17½s. to £8 7½s.
Beams, open-hrth.	£7 7½s. to £7 17½s.
Channels, open-hearth	£7 12½s. to £8 2½s.
Angles, open-hearth	£7 7½s. to £7 17½s.
Black sheets, No. 24 gage	£9
Galvanized sheets, No. 24 gage	£11 to £11 10s.

Continental Prices, f.o.b. Continental Ports

Per Metric Ton, Gold £ at $4.86

*Ingots	£2 5s.
*Billets, Thomas.	£2 7s.
Wire rods, No. 5 B.W.G.	£4 10s.
Black sheets, No. 31 gage, Japanese	£11 5s.
*Steel bars, merchant	£3
*Sheet bars	£2 8s.
Plates, ¼ in. and up	£3 18s. 6d.
*Plates, ⅞ in. and 5 mm.	£4 1s.
*Sheets, ⅛ in.	£4 6s.
*Ship plates	£4 10s.
*Beams, Thomas.	£2 16s. 6d.
*Angles (basis)	£3
Hoops and strip steel over 6-in. base	£3 15s.
Wire, plain, No. 8.	£5 7s. 6d.
Wire nails	£5 15s.
Wire, barbed, 4-pt. No. 10 B.W.G.	£8 15s.

*Prices as established by European Raw Steel Cartel.

August Coal Production Up Nearly 15 Per Cent

PRELIMINARY statistics issued by the Department of Commerce indicate an August bituminous coal production of 33,852,000 tons, an increase of 14.9 per cent over the July total. The average production for August was 1,254,000 tons per working day. Total production for the first eight months aggregated 208,544,000 net tons. Anthracite production for August was 4,387,000 tons, raising the total production for the eight months to 30,451,000 tons. August beehive coke production was 67,400 net tons, a decline of 1000 tons as compared with the July output. When compared with August, 1932, production, the corresponding period in 1933 shows an increase of 50.6 per cent in bituminous coal production, 26.4 per cent for anthracite coal, and 65.5 per cent for beehive coke.

Will Oppose Provisions Of Steel Scrap Code

A committee of 15 members of the organized scrap iron and steel brokers in the Pittsburgh district met recently to study and analyze the scrap iron and steel code which Benjamin Schwartz, director general of the Institute of Scrap Iron and Steel, has designated as representative and inclusive for the entire industry. The committee unanimously agreed that certain clauses of the code prepared by Mr. Schwartz impose inequitable restrictions and are contradictory to the desire for a workable set of regulations. The local group, which comprises 95 per cent of the dealers in the Pittsburgh trading area, will submit protests at the code hearing for the industry to be held at some future date at Washington.

Code Submitted By Distributers of Machine Tools and Equipment

A CODE of fair competition for distributers of machine tools and equipment has been submitted to the Administrator by Associated Machine Tool Dealers, Jenkins Arcade Building, Pittsburgh.

The proposed Code, which is in conformity with the views of distributers handling over 75 per cent of the total distribution of machine tools and related equipment, is as follows:

Article I—Purpose

This Code is created to increase employment, reduce working hours, establish equitable wage rates, improve the standards of labor, eliminate unfair, wasteful and uneconomical competitive practices in the distribution of machine tools and otherwise to carry out the policy, purposes and provisions of the National Industrial Recovery Act.

This Code is presented on behalf of distributers of machine tools by the Associated Machine Tool Dealers, which represent distributers whose sales constitute approximately 75 per cent of the total sales of these distributers and is, therefore, representative of the distributers of machine tools.

The Association imposes no inequitable restrictions on admission to membership therein. Terms of membership in the Association shall be the same as provided in the Associated Machine Tool Dealers constitution and by-laws, namely, an initiation fee of fifty ($50.00) dollars and assessments pro rata as funds are required.

Any distributer of machine tools may participate in any endeavors of applicant in the preparation of any revisions of, or additions or supplements to this Code, by accepting the proper pro rata share of the cost and responsibility of creating and administering it, either by becoming a member of applicant, or by paying to applicant an amount equal to the dues from time to time provided to be paid by a member of applicant in like situation.

Any distributer of machine tools desiring to participate in the provisions of the Code may do so by signing and delivering to the secretary of the Associated Machine Tool Dealers, a letter in which the distributer assents to all the provisions of the Code.

Article II—Definitions

For the purposes of this Code, a distributer of machine tools shall be defined as an individual, firm, partnership, or corporation who sells to industrial consumers and is classified as follows:

(a) Machine tool dealer, an individual, partnership, firm or corporation who purchases machine tools from a builder and resells to the user or other trade outlets, maintains an adequate selling organization and accounting system, and performs all other functions necessary for the sale of machine tools.

(b) Machine tool builder who sells direct to user.

(c) Manufacturer's agent who sells direct to user for the account of machine tool builders.

(d) Importer of machine tools who sells direct to user.

For the purposes of this Code, machine tools and equipment shall be defined as metal working machines, including attachments and fixtures which perform generally the function of changing the form of metal by the use of cutting tools, abrasives, forming dies, rolls, etc.

The term "employee" as used in this Code shall apply to and include all persons employed in the Industry in the warehousing, shipping and transporting of machine tools, office and clerical help, but shall not embrace outside salesmen, executives and their staff, and night watchmen.

Article III—Monopolies

This Code, as well as any supplemental Codes or amendments thereto that may be filed and approved, is not designed to promote monopolies, permit monopolistic practices, or to eliminate or oppress small enterprises and will not operate to discriminate against them but will tend to effectuate the policy, purposes and provisions of the National Industrial Recovery Act.

Article IV—Labor Code

Under this Code it is especially provided that:

Employees shall have the right to organize and bargain collectively, through representatives of their own choosing and shall be free from interference, restraint or coercion of employers of labor, or their agents in the designation of such representatives, or in self-organization or in other concerted activities for the purpose of collective bargaining or other mutual aid or protection.

No employee and no one seeking employment shall be required as a condition of employment to join any company union or to refrain from joining, organizing or assisting a labor organization of his own choosing; and

Employers shall comply with the maximum hours of labor, minimum rates of pay and other conditions of employment approved or prescribed by the President.

To effectuate Articles IV, V and VI of the Code, employees of members of the Code may set up a committee of three (3) of their own choosing.

Article V—Maximum Hours

On and after the effective date of this Code, no member of the industry shall work any employee for more than forty (40) hours per week, excepting at inventory, and other peak periods employees may work forty-eight (48) hours per week for a maximum of not to exceed three (3) weeks in each six (6) months, and except outside delivery men and maintenance employees who may be employed forty-eight (48) hours weekly or more, if paid time and one-third for all hours over forty-eight (48) hours weekly, and except executives whose salaries exceed thirty-five ($35.00) dollars per week, executives' staff, outside salesmen and night watchmen.

And not to reduce the hours of any store or service operation to below fifty-two (52) hours in any one (1) week, unless such hours were less than fifty-two (52) hours per week before July 1, 1933, and in the latter case not to reduce such hours at all.

On and after the effective date of this Code, no person under the age of sixteen shall be employed by a member of the industry.

Article VI—Minimum Compensation

On and after the effective date of this Code, members of the industry shall establish minimum weekly rates of wages for the industry for a work week specified in Article V as follows:

(a) The minimum wages that shall be paid employees shall be at the rate of fifteen ($15.00) dollars per week, except that apprentice employees with less than six (6) months experience in the Industry may be paid at the rate of two ($2.00) dollars less for a work week.

Article VII—Supervisory Agency

To further effectuate the policies of the Act, the applicant organization, acting by or through any committee, or section thereof, to which it has theretofore delegated authority, is hereby designated the Supervisory Agency, for administering, supervising and promoting the performance of the provisions of this Code by the members of the industry. Such agency may from time to time present to the Administrator recommendations based on conditions in the industry as they may develop which will tend to effectuate the operation of the provisions of this Code and the policy of the National Industrial Recovery Act, and in particular along the following lines:

(a) Recommendations for the making of requirements by the Administrator as to practices by persons engaged in the industry as to methods and conditions of trading, the naming and reporting of prices which may be appropriate to avoid discrimination, to promote the stabilization of the Industry, to prevent and eliminate unfair and destructive competitive prices and practices.

(b) Recommendations for dealing with any inequalities that may otherwise arise to endanger the stability of the Industry and of employment. Such recommendations, when approved by the Administrator, shall have the same force and effect as any other provisions of this Code.

(c) Such agency is also set up to—

1. Cooperate with the Administrator in making investigations as to the functioning and observance of any of the provisions of this Code, at its own instance or on complaint by any person affected, and to report the same to the Administrator, and

2. Recommend that the local group in each trading area set up a Trading Area Committee of one, two or three, for the purpose of carrying out the provisions of this Code, and

3. With the approval of a Trading Area Committee, take the necessary steps to set-up in the interested area, a trade-in plan to make available to the perspective purchasers of machine tools, having used equipment to dispose of, an outlet whereby they can secure the market price prevailing for same.

Article VIII—Statistics

In order to provide data for the administration of the Act and this Code, the Supervisory Agency shall gather, any and all statistical information from distributers of machine tools which from

time to time is necessary for the enforcement of this Code.

Article IX—Unfair Competition

Unfair practices shall be deemed to be practices or acts which by subterfuge, concealment, misrepresentation, or by any form of discrimination result in selling below published prices, or in deceiving or misleading purchasers, or in misrepresenting the products of competitors. Any such unfair practice is hereby declared to be and to constitute an unfair method of competition.

Article X—General

This Code and all the provisions thereof are expressly made subject to the right of the President, in accordance with the provision of Clause 10 (b) of the National Industrial Recovery Act, from time to time to cancel or modify any order, approval, license, rule or regulation, issued under Title I of said Act, and specifically to the right of the President to cancel or modify his approval of this Code or any conditions imposed by him upon his approval thereof.

Such of the provisions of this Code as are not required to be included therein by the National Industrial Recovery Act, may, with the approval of the President, be modified or eliminated as changes in circumstances or experience may indicate. It is contemplated that from time to time supplementary provisions to this Code or additional Codes will be submitted for the approval of the President to prevent unfair competition in price and other unfair and destructive competitive practices and to effectuate the other purposes and policies of Title I of the National Industrial Recovery Act consistent with the provisions thereof.

Violation of any provision of this Code or any approved rule issued thereunder, is an unfair method of competition within the meaning of the Act.

This Code shall become effective ten days after its approval by the President of the United States.

Public Works Allotments Are Speeded Up

WASHINGTON, Sept. 12.—Speeding up its drive, the Federal Emergency Administration of Public Works (PWA) by working night and day and without awaiting complete organization, last week approved projects totaling $33,377,396. Announcement of the building allotments by Public Works Administrator Harold L. Ickes brought the total allocated from the $3,000,000,000 fund to $1,431,234. The past week disclosed the increasing number of non-Federal projects approved and given allotments. It also saw a total of 65 buildings, to be erected under the supervision of the Treasury, given approval. They will cost over $40,000,000 and do not include the numerous Federal buildings and repair on such buildings provided for by PWA allotments to various other government departments.

The new buildings approved last week, totaling 22, are listed in the table below.

The first project for which a loan was made since setting up of decentralized machinery to consider non-Federal applications was for sewerage improvements in Milwaukee County, Wis., an allotment of $1,850,000 having been made to the Board of Supervisors. The loan is equal to 30 per cent of the cost of materials and labor, the basis of all private loans, as required by the Recovery Act. Construction of two bridges, one across the Bellamy River and the other across the Little Bay to link state and Federal highway systems will be undertaken by the State of New Hampshire through a loan of $220,000.

Public buildings, docks and other Government structures damaged by the recent storm along the Atlantic coast will be repaired at once through loans totaling $939,590. Of this sum $587,565 will be used to repair damage at navy yards and other stations; $170,700 for aviation stations and $91,300 for ordnance stations.

The PWA granted $75,000 to the First Taxing District of Norwalk, Conn., to assist in financing water system improvements. Other grants for water works and improvements to water system are: Montgomery, Ala., $21,000; East Brunswick, N. J., $18,000; Petersburg, Ind., $15,000; Northport, Mich., $9,600.

STATE	CITY OR LOCALITY	CHARACTER OF WORK	TOTAL ESTIMATED COST TO COMPLETE
Arizona	Nogales	Post Office	$135,000
California	Anaheim	Post Office	117,000
California	Tecate	Border Station	53,550
Idaho	Eastport	Border Station	53,100
Louisiana	Carville	Marine Hospital	285,500
Maine	Portland	Marine Hospital	198,000
Maryland	Baltimore	Quarantine Station	45,000
Massachusetts	Boston	Marine Hospital	27,000
Massachusetts	Boston	Quarantine Station	99,000
Missouri	Independence	Post Office	58,500
Montana	Sweetgrass	Border Station	54,980
New Mexico	Ft. Stanton	Marine Hospital	243,000
New York	Buffalo	Marine Hospital	220,000
New York	New York City	Quarantine Station	108,000
Pennsylvania	Pittsburgh	Marine Hospital	157,500
South Carolina	Charleston	Quarantine Station	117,000
Vermont	Canaan	Border Station	47,390
Vermont	Highgate Springs	Border Station	52,821
Vermont	North Troy	Border Station	50,400
Vermont	Norton Mills	Border Station	47,875
Vermont	West Berkshire	Border Station	52,655
Washington	Laurier	Border Station	50,400
		Total 22	$2,273,671

New Alloy Developed to Supplant Lead for Pipe

THE British Non-Ferrous Metals Research Association, at a recent exhibition in London, exhibited a new type of water pipe made from ternary lead alloy, which is designed to lower building costs and to show a greater resistance to damage than ordinary lead pipe.

The new pipe has only two-thirds the weight of lead pipe of similar capacity, and is made from alloys having 60 per cent greater strength, and resistance to vibration of 300 to 400 per cent greater than its lead equivalents. The alloy is composed of 98.25 per cent lead, 1.5 per cent tin, 0.25 per cent cadmium. An optional composition is 99.25 per cent lead, 0.25 per cent cadmium and 0.50 per cent antimony. It is said that the new pipe has greater resistance to corrosive water than lead, and a price saving of 15 to 20 per cent can be realized by its use. The new alloy may also be used for cable sheathing, and for glazing bar sheathing for window frames, or for any other service where the coating must withstand extreme vibration.

Bids Opened on Steel For 10 Destroyers

WASHINGTON, Sept. 12.—The Bureau of Supplies and Accounts, Navy Department, today opened bids for approximately 6000 tons of plates for 10 destroyers to be built at navy yards. The vessels also call for 300 tons of steel bars and 2500 tons of shapes. Bids for the bars will be opened Sept. 15. Bids for the shapes will be opened Sept. 19.

Cast Iron Soil Pipe Code Approved

WASHINGTON, Sept. 12.—The cast iron soil pipe code was approved by President Roosevelt last Friday.

Clean Surfaces Essential in Protective Coating of Steel

PAINT and zinc coatings show a considerably better adhesion to copper steel than to ordinary steel. The surface condition of the metal exerts a profound influence on the life of the paint coats. Residual particles of blue mill scale are particularly objectionable. These are contentions of Karl Daeves, research department, Vereinigte Stahlwerke A. G., Düsseldorf, Germany, in a paper read at Chicago, Sept. 7, at a general meeting of the Electro-chemical Society. He reported on tests of which the final results will be available perhaps in five to eight years and made some interesting observations on possible reasons for the apparently satisfactory behavior of ferrous products of an earlier day.

Among the tests reported on was a study of a group of 36 sheets rolled from commercial basic Bessemer, open-hearth steel, Armco ingot iron and so-called patina steel, which is a special copper steel with 0.2 to 0.3 per cent copper. One set of the sheets was exposed in the unpainted, as rolled condition; a second set was galvanized, and a third set was protected with the usual coat of red lead and red iron oxide. All three sets of sheets were exposed on the roof of a factory to severe attack by the atmosphere of the Ruhr industrial district for a period of two years.

Comparison of the loss in weight of the *uncoated sheets* disclosed the well-known favorable effect of the copper content. The loss in weight for plain copper steel was generally only two-thirds that of ordinary commercial steel containing no copper, and that of patina steel only slightly more than half of the loss in weight.

The *galvanized sheets* of all four kinds remained unattacked by rust even after two years' exposure.

The behavior of the *painted sheets* was particularly noteworthy. The paint coating on plain steel showed numerous rust spots due to the severe attack by the flue gases of the vicinity. The patina steel and the Armco ingot iron also exhibited failures in the paint coating. These were, however, considerably less numerous than in the case of the same paint coating on plain steel. The plain steel test sheets showed the well-known blistering of the paint due to rust formation underneath the paint film. The points of failure for the same paint on patina steel and armco iron had an altogether different aspect. Here no real lifting of the paint film and evidently no undermining by rust had taken place. The rust spots with these two metals, said Mr. Daeves, may be repaired without much difficulty, whereas in the case of the plain steel a complete renewal of the painting will be necessary.

Bearing on the fewer corrosion difficulties experienced even as late as the prewar era, Mr. Daeves had this to say:

After the war of 1914-18 shipbuilders in various countries discovered that the hulls of many new ships deteriorated in a very short time by pitting on the waterside. At first it was believed that this pitting was due to changes in the composition of the steel. After it was demonstrated, however, that the pitting always occurred at those points where the scale had not been removed (e.g., brand marks, rivet heads, etc.) it was then generally agreed that the more rapid deterioration of the new ship plates was due to insufficient cleaning. Indeed, no serious pitting occurred on these very same plates after they had been thoroughly cleaned.

There still remains the question: Why was it that when before the war the plates were descaled only by hand brushing, such pitting was not discovered on ships or at least occurred much more seldom? It was found, however, that before the war the rolled ship plates were subjected to a weathering process of many months which is often as effective as pickling and furthermore permits of a more complete removal of the scale in the subsequent brushing operation, whereas today the plates are brushed and painted immediately after rolling.

The question naturally arises, he continued, as to whether the good state of preservation frequently displayed by older irons (up to the middle of the nineteenth century) is to be attributed to a certain combination of a protective coating method particularly suited to these older irons together with certain inherent characteristics of these irons which favored the good performance of the protective coatings. It may be argued that the earlier irons were more adaptable to an easy removal of oxide and mill scale than the modern steels. Railings and ornamental forgings of the days of puddled iron are mostly in an excellent state of preservation. If, however, the old surface of these pieces is removed in a lathe or if these parts are re-rolled into other shapes, their superiority will almost entirely disappear. In the unpainted condition the pieces corrode to the same extent as do the modern steels of the same composition.

Upon interviewing old smiths they admit that formerly an entirely different method of painting was used for railings, ornamental forgings and other parts which would be exposed to the atmosphere. Sven Rinman (in a publication of 1814) describes these methods as follows:

". . . the smiths heat their coarser forgings and then spread tar over the surface which, when hot, loses its volatile oils by evaporation, leaving behind a resinous portion which adheres firmly to the surface like a varnish, providing the tar is sufficiently fluid and is applied at the proper temperature. A better procedure is to heat the iron to a dark-red temperature (very likely polished bright beforehand, and to spread uniformly over the surface a good linseed oil varnish which also should be allowed to partially vaporize due to the heat, until it takes on a dark-brown color. . . . Sheets will show excellent rust resistance if graphite in linseed varnish, of the consistency of a thick paint, is rubbed into the heated plate surface with a woolen cloth.

According to information from old mill foremen a similar treatment of the work was continued into the earlier days of mild steel, in particular with forgings, but also with rolled products, railings, etc. However, instead of graphite, red lead was rubbed in hot. But before rubbing, the parts were all thoroughly cleaned.

Mr. Daeves suggested the outstanding durability of older articles of puddled iron may be due not so much to superiority of these irons as such, but to a superiority of the methods of applying the protective coatings; or possibly to a combination perhaps of irons of inherently good characteristics and good coatings. There is no doubt, he added, that these older methods of surface protection may be carried out commercially today.

Depositing Nickel on Steel

IN a paper devoted largely to tests for *determining the adhesion of electrodeposits on a base metal*, presented Sept. 7, at a meeting of the Electrochemical Society in Chicago, A. W. Hothersall, research department, Woolwich, England, outlined causes of poor adhesion of nickel to steel.

The surface of the base metal may be embrittled by co-deposited hydrogen, he said, or the surface, when deposition commences, may have a film of oxide, greasy or colloidal matter or insoluble matter such as carbon or carbides liberated during pickling, or there may be a layer of defective deposit formed in the early stages of deposition.

In his summarization, however, he made the positive statement that "a high degree of adhesion of electrodeposited nickel, approximating in many cases to the tensile strength of the basis metal or of the deposit, whichever is the weaker, can be obtained by suitable cleaning procedures to a variety of basis metals."

"Merit" Clause Is Attacked In Steel Casting Code

WASHINGTON, Sept. 12.—Providing for hours of labor, rates of pay and other conditions similar to those in the iron and steel code, hearings were held last Thusray on the Code for the steel casting industry before Deputy Administrator H. O. King, of the National Recovery Administration. It was presented by Frederick A. Lorenz, Chicago, member of the board of directors of the Steel Founders' Society, sponsor of the code. The code provides for an average work-week of 40 hr., with 48 hr. allowed in peak period. The country is divided into 21 wage districts with minimum pay running from 25c. per hour in the deep South to 40c. in the Pittsburgh, Wheeling, Chicago and St. Louis districts.*

Mr. Lorenz said that the industry touched bottom in the depression of 1932 when production fell to 10 per cent. The trend was said to be upward with a prevailing rate of 20 per cent. He said that 25,150 workers are now on the industry's payroll compared with 43,000 in the normal year 1926, leaving 18,000 unemployed. Mr. Lorenz said the industry would more than absorb that number if production returns to even 50 per cent of capacity. At the same time, he said, mimimum wages proposed in the code represent an increase of from 12 to 32 per cent above existing pay.

Spokesmen for workers denied this statement. The proposed hour and wage schedules were also strongly assailed by Chester A. Sample of the metal trades department, American Federation of Labor, who declared they offer no improvement over existing conditions and would contribute nothing toward wiping out unemployment and increasing purchasing power. The usual demand of organized labor for a 5-day, 30-hr. week was made by Mr. Sample. He requested minimum wages of $25 per week for the entire industry. He said the average work week in the industry now is 30-hr. and that if the 40-hr. week is approved there will be danger that 5000 additional men will be thrown out of work to join the 23,000 he claimed are now idle. Mr. Sample said unskilled labor in the industry was getting 53c. an hour in 1930, and 43c. as late as 1932. The average earning of employees in 1929 was said to have been $25 a week while under the proposed code it would be only from $12 to $15.

Frey Attacks Merit Clause

John P. Frey, appearing for the Labor Advisory Board, attacked the labor provision in the steel casting industry code which is similar to that in the approved automobile code. It provides for hiring and discharging on individual merit without regard to labor affiliation. Frey insisted the provision is designed to interpret the collective bargaining section of the Recovery Act. Removal of the provision was demanded by John H. Wilkerson, labor adviser. It is certain that Mr. Wilkerson will have his way if General Hugh S. Johnson, National Administrator, makes good a statement he made to the press on Tuesday of last week. He said no other codes would be permitted to carry the automobile labor provision. Mr. Lorenz said the industry had given long discussion to the matter and wanted the section to stay in the code.

Harry Stevenson, of the International Molders' Union, asked that $38 be specified as the wage of molders and core workers for a 30-hr. week.

As a result of changes made in the definition section of the code objections that had been lodged with the Administrator were withdrawn by a number of concerns, including the Baldwin Locomotive Works, the American Locomotive Co., the General Steel Castings Co., and the Machinery and Allied Products Institute. The Alloys Casting Association, which has filed its own code, offered an amendment to make it clear that nickel and chromium castings are not included in the code. The amendment was accepted by Mr. Lorenz. Carroll Burton, president of the Lorain Steel Co., sent a letter suggesting that companies like his own which are under the iron and steel code but also do steel casting be given the option of deciding under which code they wish to operate.

An amendment submitted by Mr. Lorenz excepted executives making $35 a week or more from the strict working of the 40-hr. week. Another amendment he presented fixed a minimum wage of $15 per week for office help and still another strengthened the 8-hr. day so that it applies to practically all employees except the supervisory staff and the maintenance crews.

Limitation of Capacity Opposed

Discussion arose over a clause providing that except by three-fourths vote of the code authority there shall be no increase in the metal-pouring capacity of the industry. Deputy Administrator King indicated an unwillingness to accept this provision. Mr. Lorenz explained that the industry is already badly overcrowded with 82 per cent excess capacity.

"That may be true," replied Mr. King, "but if every code carried such a provision there would be no opportunity left for any one to go into business in the United States."

Mr. Wilkerson asked what the effect would be if molders were to ask a provision that no new molders be trained in the industry. Deputy King followed with the query as to what the effect on the steel casting industry would be if the railroads should come in with a code containing a prohibition against any new equipment. Mr. Lorenz replied that there would be "a very serious curtailment" in the steel casting industry.

* See *Iron Age*, Aug. 17, p. 31.

Features of Proposed Foundry Supply Code

WASHINGTON, Sept. 12.—The code of fair competition submitted to the National Recovery Administration by the Foundry Supply Manufacturers' Association provides that 15 days after approval of the code all facing mills or other manufacturing establishments and distributing warehouses operated by members of the association shall work on a basis not to exceed 36-hr. per week. The Association claims to represent over 70 per cent of the foundry facing and supplies produced in the United States. Foundry facing and supplies as covered by the code include such commodities as sea coal, parting core, core paste, pitch core compound, foundry plumbago, etc. Where employees work overtime reductions from the regular schedule are to be made later so that the average over a six months' period will not be more than 36-hr. per week. Repair crews, etc., are excepted from the provisions when necessary to keep plants in operation but if employed for more than 36-hr. they are to be paid time and one-half for overtime.

Wages are based on those paid in 1928, reduced by 25 per cent, said to represent a like reduction in the cost of living, multiplied by 48, the average number of week-hours in 1928, divided by 36. The minimum wage is fixed at $16.20 a week or a rate of 45c. per 36-hr. week. The association estimates it is now employing 150 men and that the formula it proposes will enable it to engage 50 additional men and that total wages on the present operating schedule will be $42,120.

The proposed code carries so-called open shop declaration which the National Recovery Administration has banned.

The code presented by the aluminum fabricating industry fixes a minimum wage rate of 50c. an hour and establish a 35-hr. week for factory workers. The weekly-minimum wage is set at $15.

Hourly rates ranging from 44c. for general labor up to 63c. for repair bosses are provided in the code proposed by the molybdenum mining industry. The work-day is set at 8-hr. and the work week at 40-hr., with certain limitations.

$6,000,000 Allocated to Indian and Park Projects

WASHINGTON, Sept. 12.—Allocation of $6,164,050 for 74 Indian projects, an allotment of $2,279,474 to the National Parks, Buildings and Reservation Commission and an allotment of $1,531,945 to the Coast Guard, together with numerous miscellaneous allotments, have been announced by the Federal Emergency Administration of Public Works. Much of the work will be begun in the immediate future, some within a week, and will call for good-sized quantities of materials, including iron and steel and equipment.

The allocation for the Indian projects, to be undertaken in nine states, is to cover construction and irrigation work. The general projects will involve an expenditure of $4,896,000 while Navajo reservation projects will entail an expenditure of $940,550 and Pueblo projects, $327,500. The largest single item in the general project classification calls for an allotment of $1,650,000 in connection with the San Carlos, Ariz., project. It concerns canal and lateral work and will require pumping plants and transmission lines. The largest individual Indian reservation item involves $350,000 for enlargement of the system on the Fruitland, N. M., Navajo project.

Of the allotments to the National Parks, Buildings and Reservations Commission, $1,059,450 will go for roads and trails in National parks. Grand Canyon National Park in Arizona will receive $428,000 for road surfacing and construction of parking space. Hot Springs National Park in Arkansas will receive $210,000 for paving and construction. Parks in California, including Sequoia National Park, Yosemite National Park, the Pinnacles national monument and the Muir woods monument will receive $227,000 for various roads and trails. Physical improvements other than roads and trails will receive $895,000, a large part of which will be used to purchase electrical and fire equipment, and construction and reconditioning of buildings. In California, $291,650 will be used for building reconditioning, electrical and fire equipment, construction and extension of water systems in General Grant National Park, Lassen Volcanic National Park, Sequoia National Park and Yosemite National Park. In Colorado, $37,900 will be spent for construction of machine shops, repairs, etc., in Rocky Mountain National Park and Mesa Verde National Park. In Wyoming, $280,000 will be used for improvements, construction and reconditioning in the Yellowstone National Park, Grand Teton National Park and the Devil's Tower national monument.

Of the allotment to the Coast Guard, $317,075 will be used to repair damage done by the recent storm to Coast Guard property and fire damage at Lewes Station, Lewes, Del., and the old Chicago Station, Chicago. New construction projects will call for an outlay of $1,000,170 while $214,700 will be spent on reconditioning projects. The largest single item is $500,000 for lifeboats and surfboats for cutters and stations.

Other allotments are:

Madison, Wis., $913,000 for construction of sewerage works.

Eau Claire, Wis., $250,000, construction of water works system improvements.

GENERAL PROJECTS INCLUDED IN INDIAN ALLOTMENTS

STATE	PROJECT	PURPOSE	AMOUNT TO BE ALLOTTED
Arizona	San Carlos (Pima)	Canals, laterals, pumping plants, transmission lines	$1,650,000
Arizona	San Carlos (Pima)	Subjugation of raw lands	1,000,000
Arizona	Colorado River	Drainage	150,000
Arizona	Chiu Chui	Pumping plants	25,000
Arizona	San Carlos	Wells—pumping plants	25,000
Arizona	San Xavier	Wells—pumping plants	50,000
Montana	Flathead	Storage, canals, laterals	540,000
Wyoming	Shoshone (Wind River)	Storage, canals, laterals	391,000
Colorado	Pine River	Rehabilitation	125,000
Idaho	Fort Hall	Small structures	17,500
Washington	Yakima	Pumping plant, drainage	106,000
California	Pala	Rehabilitation	35,000
California	Rincon	Rehabilitation	30,000
Arizona	Sells	Replacement stockwell equip.	50,000
Montana	Crow	Structure replacement	50,000
Montana	Ft. Belknap	Miscellaneous repairs	40,000
Montana	Ft. Peck	Repairs	15,000
Wyoming	Shoshone (Wind River)	Miscellaneous repairs	50,000
Nevada	Duck Valley	Storage reservoir	292,000
Montana	Tongue River	Rehabilitation	34,500
Arizona	Sells	Santa Cruz storage dam	30,000
Nevada	Walker River	Storage dam	130,000
California	Mission	Small structures	15,000
Arizona	Salt River—camp	Wells, pumping plants and canal rehabilitation	45,000
		Total General Projects	$4,896,000

Ickes Justifies Housing Loans

WASHINGTON, Sept. 12.—The policy of the Public Works Administration to make loans for the construction of low-cost housing is not to be regarded as competition with private enterprise, says Public Works Administrator Harold L. Ickes. He declared that the fact is private enterprise has failed to provide the type of housing facilities such as the administration contemplates under the National Recovery Act. It was pointed out that the primary purpose of every loan made by the Public Works Administration is to put men back on the payrolls. "The provision of good low-cost housing and clearing of slums," Administrator Ickes said, "create the best kind of jobs and either or both are as constructive a type public works as can be undertaken.

"Private enterprise has, in fact, signally failed in slum clearance and has left the slums of America's cities to stew in their own unhealthy juice," said Mr. Ickes. "The entire community is now paying the price of this failure—in higher taxes to meet the fixed charges for paying and water and sewers, which the slums and blighted areas cannot pay for themselves; in increased fire risk; in increased health problems; in greater costs for police protection; and in the depression of adjoining property values."

Making other points to justify government loans, Mr. Ickes concluded:

"When these facts are taken into consideration, no one can consistently preserve a dog-in-the-manger attitude toward the low-cost housing loans of the Public Works Administration."

Navy Announces Bids, Authorizes Shore Projects

WASHINGTON, Sept. 12.—Acting Secretary of the Navy Henry L. Roosevelt has announced the following bids for material for naval vessels which are to be constructed:

Sept. 15: Approximately 2482 tons of medium black and galvanized shapes, estimated to cost $211,435; 8895 lb. of nickel alloy copper bars, estimated to cost $4,597.

Sept. 19: 9210-ft. of seamless steel tubing, estimated to cost $7,124.

Sept. 22: 1700 tin containers, esti-

mated to cost $1,275; 13 metal filing cabinets, estimated to cost $2,600.

Sept. 29: 63 6-in. gun barrel forgings; 36 motor trucks, estimated to cost $93,900; 45 motor trucks, estimated to cost $29,525; 10 electric-driven winches, estimated to cost $15,740.

Oct. 3: 37 railroad cars, estimated to cost $100,900.

The Treasury Department has made available the $13,610,000 allocated to public works at shore stations. Navy yards have been directed to proceed with the projects to be undertaken at an aggregate estimated cost of $3,000,000. Advertisements of projects aggregating $2,000,000 have been sent out in addition to the $2,000,000 previously reported. The Treasury has also made available the $2,250,000 allocated to complete the Philadelphia naval hospital and work is under way.

Concrete Reinforcing Code Parallels Steel Provisions

WASHINGTON, Sept. 12.—The code of fair competition filed with the National Recovery Administration by the Concrete Reinforcing Steel Institute for the reinforcing materials fabricating industry, except for provisions covering practices and descriptions suitable to the reinforcing industry, is largely similar to the code of the American Iron and Steel Institute as approved by President Roosevelt.

The reinforcing concrete steel code divides the country into the same 21 districts with the same hours of work and rates of pay as provided in the American Iron and Steel Institute, calling for an average of not more than 40 hr. per week in any six months' period with wages ranging from 25c. in the Southern district up to 40c. an hour. The reinforcing materials fabricating industry basing points are Pittsburgh, Buffalo, New York, Cleveland, Chicago, Gary, Ind., Birmingham, Youngstown, Ohio, Gulf ports, including Mobile, Ala., New Orleans, La., and Orange, Port Arthur, Beaumont, Baytown, Galveston and Houston, Tex., and Pacific ports, including San Pedro and San Francisco, Cal.; Portland, Ore., and Seattle, Wash.

The code is to be administered under the direction of the Board of Directors of the Concrete Reinforcing Steel Institute, with the same jurisdiction for the reinforcing industry as that given the Board of Directors of the American Iron and Steel Institute for the steel industry. Prices and other data are to be filed by the reinforcing industry with the Concrete Reinforcing Institute.

Prices to Be Filed

Prices, including services and extras, are to be filed with the Secretary not later than the effective date of the code. New lists cannot become effective before 10 days after filing. Each list is to state the effective date, the first list to become operative when the code becomes effective. Lists are to be open to inspection at all reasonable times by anyone. Prices are to be quoted in a delivered basis. It is provided, however, in the case of reinforcing bars and spirals, if delivery is made by any other than all-rail transportation the purchaser may be allowed a reduction otherwise chargeable at a rate previously approved by the Board of Directors.

Additionally, members of the industry will be permitted to allow discounts to dealers and commissions to agents. This is conditioned upon dealers and agents not selling below their purchase price, without the approval of the Board. Such sales would subject a member of the industry to a penalty of $10 per ton or 20 per cent of the sales price. The Board is authorized to determine the question of whether or not any purchaser or prospective purchaser is a dealer. Reinforcing material would be sold to a dealer at a dealer's discount only when purchased for resale.

Each member of the industry would be required to file with the secretary a complete list of names and addresses of all dealers, agents, or others to whom the member allows or is under contract to pay any discount, commission, bonus or other compensation, stating the amounts. Salaried persons devoting their full time to the service of the industry would not be included in such lists.

The Board of Directors would have the power to determine whether any of these forms of remuneration has been or may be used as a means of effecting a departure from published prices. Contracts or arrangement for the payment of any compensation would become effective until 15 days after filing with the Secretary, except that those in effect at the time the code is approved they would become effective five days after such filing. Maximum rates of discount and free credit terms are fixed at ½ per cent when payment is made within 10 days and net cash within 30 days after invoice. After that period interest is charged.

Estimating Bureaus to Aid Bidding

In submitting a lump bid on a project whose value of all the reinforcing materials is over $500 members of the industry are to purchase estimates from an estimating bureau, established or approved by the Board of Directors, located in the district where the work is to be undertaken. Each bidding member is to deposit a copy of his individual price applying in the district with the Bureau. The Bureau will then apply the price lists of the individual members to the various items and kinds of reinforcing materials included in the Bureau's estimate on any specified project. The quantity estimate so priced will be used by the individual member in submitting lump sum bids. Only the quantity, lump sum or maximum price secured from the Bureau is to be guaranteed. The code forbids the quoting of any "average units price" on a project of more than $500 unless the average unit price has been obtained from the Bureau. Wherever a member sells on a unit price, he is not to guarantee any maximum price or quantity. Except in the case of a material change approved by the local Estimating Bureau, no member shall revise the design or specification or request an alternate or revised estimate when quoting to a purchaser.

The code sets up 24 unfair practices which are declared to be violations. One prohibits the submission of more than one bid on a project except in the event of material change in specifications or a decrease in the published prices of the producers of raw materials, notification of which shall have been given to the Secretary, or in the event of a change in the published price of any other member of the industry. Financing any purchaser except through extension of credit is prohibited. Shipment of foreign steel not marked by the country of origin is banned, except for stocks owned by members of the industry at the time the code goes into effect, the secretary to be supplied with the list of stocks and to be notified of all shipments of foreign steel and the date such stocks are exhausted.

Other practices held to be violations of the code are:

Entering into contracts for reinforcing materials without actual obligation on the part of the buyer to purchase any specific quantity for delivery within a specified time, or for any particular job or jobs.

Making the acceptance of a separately priced nonreinforcing material in a quotation or the making of another quotation for a nonreinforcing material contingent upon the acceptance of a quotation for reinforcing materials.

Shipping or receiving on consignment.

Inspection services, except regular mill test reports or retests after rejection, at other than the customary rate charged by established inspection organizations.

Selling below cost, cost to be determined by a system of accounting prescribed by the Board.

Capital Purchases Considered In Government's "Buy Now" Drive

WASHINGTON, Sept. 12.—Declaring that it is a serious matter, General Hugh S. Johnson, National Recovery Administrator, has announced that he has given considerable thought to the matter of equipment buying and the replacing of obsolete equipment in connection with the "Buy Now" drive. He stated that with regard to the purchase of new equipment, the movement depends upon what is obtained through the Public Works Administration.

When it was suggested that he had advocated a policy of replacement of machinery and equipment, probably of railroads mostly, General Johnson replied:

"There is authority to lend money for railway maintenance and equipment and it is broader authority than there is in the Reconstruction Finance Corporation Act. It is broader because of the restrictions in the latter. The actual wording of the restriction of the lending power of the Reconstruction Finance Corporation Act is absolutely reached insofar as the R.F.C. has authority to loan, but it has no authority to loan to private interests and that authority was not broadened by the Recovery Act except for railroad maintenance and equipment by direct Government financing."

Efforts to include metal-working machinery and other capital goods in the "Buy Now" drive are said to have reached the point where discussion has been taken up with the Public Works Administration regarding the securing of loans. Nothing of a specific character, however, has been announced.

Tied in with the program apparently is the consideration the White House has announced it has given to the matter of specific loans to the railroads for the purchase of steel rails, "provided the price of steel rails can be reduced." The question has renewed the old criticism that the price of steel rails has not been reduced during recent years as have prices on other steel products. The money, if borrowed, would come from the Public Works Administration and be provided as direct loans. The idea of getting the railroads to purchase steel rails, at a price below the prevailing $40 level long has been suggested by Transportation Coordinator Joseph B. Eastman. He has also proposed loans from the Public Works Administration for the purchase of railroad equipment. It is understood that the President has talked to both Mr. Eastman and railroad executives regarding the purchase of steel rails and the railroads are said to have informed the President they are willing to buy rails if prices are reduced. Rail makers apparently have not been consulted in the matter.

While there has been talk of getting the railroads to borrow money from the Public Works Administration to be used for purposes of grade crossing elimination, objection has been made that this work could not be taken up without considerable delay and therefore would not bring about immediate employment, the desired objective. Condemnation proceedings and formulation of plans by the states, it has been pointed out, would first have to be dealt with.

A consulting engineering office has been opened at 510 Twenty-seventh Street, Rock Island, Ill., by C. P. Thomas and K. D. Tilton under the name of Thomas & Tilton. They will welcome the receipt of literature from manufacturers of factory tools and equipment including that devoted to machinery and equipment for producing pulverized coal.

Last Minute Sales Leads

(Received too late for classification in our Plant Expansion Section)

Wurzburger Beverages, Inc., Sante Fe Building, Dallas, Tex., George C. Wurzburger, president, plans new brewing plant on South Lamar Street, near Hord Street, with eight-story main unit for brew-house, bottling, mechanical-cooling and other operating departments, and five other one-story structures, including boiler house. Cost over $250,000 with equipment. Albert C. Wiser, Dallas, is architect.

Bureau of Yards and Docks, Navy Department, Washington, asks bids until Sept. 27 for two Diesel electric power-operated locomotive jib cranes, each 50-ton capacity, for New York Navy Yard (Specification 7402).

Durant Motor Co. plant, Newark and North Avenues, Elizabeth, N. J., will be offered at a public sale, Sept. 22, in mortgage foreclosure proceedings, including large multi-story plant, formerly used for automobile production and later by New Jersey Terminal & Warehouse Corpn., and over 36 acres of land. No bid for less than $150,000 will be considered by Chancery Court.

Milwaukee Brewing Co., 490 Tenth Street, San Francisco, soon takes bids for extensions and improvements, including construction of new mechanical bottling works and other units. Cost about $225,000 with equipment. Warren E. Murray, 908 Hayes Street, is engineer.

United States Engineer Office, Jacksonville, Fla., asks bids until Oct. 2 for constructing ten drainage culverts complete, with automatic flood gates and auxiliary mechanical equipment, at Lake Okeechobee, Fla., and for four hurricane gate structures complete, including sector gates and operating machinery, and two portable needle dams, same place.

Common Council, St. Peter, Minn., plans new municipal electric light and power plant. Cost $225,000 with equipment. Financing being arranged. L. K. Grace is city engineer.

General Purchasing Officer, Panama Canal, Washington, asks bids until Sept. 22 for cable transmission system consisting of 32,775 ft. cable, 102 splicing joints, 32 reservoirs for oil-filled splices, cable terminals, cable spreaders, etc. (Schedule 2900).

Hemrich Brewing Co., operated by Hemrich Investment Co., 2930 Airport Way, Seattle, let general contract to Henrickson-Alstrom Co., Textile Tower Building, for new six-story plant at 5225 East Marginal Way, including brew-house, bottling works, mechanical-cooling plant, storage and distributing plant. Cost over $200,000 with equipment. John Graham, Dexter-Horton Building, is architect.

Common Council, Doniphan, Mo., plans extensions and improvements in municipal waterworks, including pumping machinery, pipe lines, etc., and new electric light and power plant. Cost $86,000 with equipment. W. A. Fuller Co., 2916 Shenandoah Avenue, St. Louis, is consulting engineer.

Bureau of Yards and Docks, Navy Department, Washington, has secured appropriation of $1,350,000 for new machine shop and electrical equipment plant at Puget Sound, Wash. Navy Yard, and plans early call for bids; also, $50,000 for new gas plant, and $55,000 for distributing and service lines, same yard; appropriation of $40,000 for extensions in aircraft overhaul shop at Coco Solo, Canal Zone.

Oakman Brewing Co., 2537 Book Tower Building, Detroit, recently organized, has arranged financing totaling $895,000, of which about $700,000 will be used for construction of new multi-story plant at Ten Mile Road and Grand Trunk Railway, including remodeling of former bakery on site for auxiliary mechanical service. One-story power plant, 50 x 60 ft., will be built. Plant will be equipped for initial annual capacity of 350,000 bbl. G. A. Mueller, 1346 Broadway, is architect and engineer. Charles G. Oakman is president, and R. E. Irion, treasurer.

William O. Baysinger, 3901 North Frederick Avenue, Milwaukee, and associates have purchased old Park Brewing Co. group at Hancock, Mich., and will rehabilitate it at estimated cost of $250,000, including new equipment throughout.

City Council, Sheboygan, Wis., has authorized board of vocational education to apply for $250,000 loan from R. F. C., for construction and equipment of new school plant.

G. Heilemann Brewing Co., LaCrosse, Wis., is investing about $200,000 in rehabilitating plant and is in market for new equipment, including two 300-hp. boilers and stokers, filters, pumps, refrigeration, etc. Richard Greiser & Son, 64 West Randolph Street, Chicago, are consulting engineers.

Menomonee Falls, Wis., Brewing Co. has purchased plant of Menomonee Sugar Co. and will remodel it into brewery at cost of $100,000. Bids on equipment now being taken by Tobias Weiss, consulting engineer, and Vernon H. Esser, architect, 757 North Broadway, Milwaukee.

Menominee, Mich., electors at special election approved proposed bond issue of $650,000 for construction and equipment of municipal light and power plant. A. B. Siegel is city clerk.

Power Piping Co., 829 Beaver Avenue, North Side, Pittsburgh, including real estate, one-story manufacturing building and two-story brick office building, will be sold at public auction on Sept. 25, by James L. Scott and William N. Quartz, receivers. Inventories to be disposed of include approximately 605,000 lb. of pipe, odd sizes and short pieces; approximately 490,000 lb. of valves, fittings, etc., and small quantities of fuel oil, die steel, chromium steel, steam packing and fire brick.

Clarification of Code Details Is Slow Process

Adoption of Additional Commercial Regulations Is Helpful— Tentative Price Schedules on Many More Products Are Made Public

ENTERING its third week of operation under the code, the steel industry still finds itself somewhat confused. Although the directors of the American Iron and Steel Institute have already prescribed seven supplementary regulations under section 4, schedule E, of the code, which have clarified such points as the exact definition of a jobber, special terms for Pacific Coast jobbers, terms on woven wire fencing, quotations on products for indirect export, and switching charges at Gulf and Pacific Coast ports, sales organizations are still somewhat befuddled by the interpretation of extras and differentials and the proper figuring of delivered prices on many finished steel products. Under the circumstances the institute has not issued official price schedules, nor has it made public prices and extras filed by individual companies as specifically prescribed by the code. This has led to confusion on the part of both sellers and buyers of steel and is unquestionably a deterrent in the placing of new business at this time.

Following the naming of a general administrative committee to function for the institute when its board of directors is not meeting, the personnel of the committees on commercial matters, labor and statistical information has been named and is appended herewith. The commercial committee has been in session this week and probably faces the most exacting work arising under the code, that of clarifying selling practices. Final approval of the work of various committees on individual products rests with the commercial committee.

Special Discount for Pacific Coast Jobbers

The first commercial regulation under section 4, schedule E, of the code, which defined jobbers, was published in THE IRON AGE last week. Regulation No. 2, relating to the sale of pipe to jobbers, awaits final approval. Regulation No. 3 provides special terms of payment for Pacific Coast jobbers on products from Eastern plants. In accordance with section 6, schedule E, of the code, the regulation was made necessary by the fact that the time in transit for products shipped to the Coast from plants east of the Mississippi River may be more than 25 days. A special maximum rate of discount for early payment of one-half of 1 per cent of the invoiced value of such products, if the invoice thereof shall be paid within 40 days from the date of such invoice, is provided, and a special maximum period of free credit of 60 days from the date of such invoice is also allowed.

Terms on Woven Wire Fencing Established

In accordance with the long-standing custom of selling woven wire fencing to jobbers on credit terms which take into consideration postponed payment on the part of farmers, the fourth commercial regulation establishes such terms. It provides that "special maximum rates of discount for early payment and special maximum periods of free credit may be allowed by members of the code with respect to sales or contracts of sale of woven wire fencing in lots of 500 rods or more to or with jobbers, mail order houses, central offices of large farm bureaus and other dealers for resale, the rates of discount to apply only to the invoiced value of such fencing as follows:

Spring Terms:—For shipments on and after Dec. 1, discount for cash: 4 per cent on or before Jan. 10; 3½ per cent on or before Feb. 10; 3 per cent on or before March 10; 2½ per cent on or before April 10; 2 per cent on or before May 10, and due net May 31.

Autum Terms:—For shipments on and after June 1, discount for cash: 4 per cent or or before July 10; 3½ per cent on or before Aug. 10; 3 per cent on or before Sept. 10; 2½ per cent on or before Oct. 10; 2 per cent on or before Nov. 10, and due net Nov. 30.

Allowances on Products for Indirect Export

In the sale of manufactured articles for export, the steel industry has recognized that the cost of the steel in such products is often the determining factor in securing the business. Commercial regulation No. 6, therefore, provides under section 7, schedule E, of the code, that "allowances may be made by members of the code from the price of sheets that such members shall sell or contract to sell to manufacturers of steel drums located in the Pacific Coast States for export trade within the meaning of the term 'export trade,' as it is used in the Export Trade Act, and from the price of plates, shapes and bars and tin plate such members shall sell or contract to sell for use by purchasers thereof in the manufacture of other articles for such export trade which shall be the smallest allowances that respectively shall be adequate in order to enable such member of the code to meet competitive conditions in the sale of such products, each such allowance to be promptly reported to the board of directors by the member of the code which shall have made it; provided, however, that no such allowance shall be made until such fabricated or manufactured articles shall have been shipped in such export trade."

Port Switching Charges Established

The seventh regulation establishes 50c. a ton as a fair average of switching charges now in effect within the switching areas of the ports listed as basing points under schedule F of the code and provides that this charge shall be added to the base prices of steel products in making deliveries at Gulf or Pacific Coast ports.

Other Prices and Extras Now in Use

Since last week extras and differentials on certain other steel products have been tentatively agreed upon and are published herewith. Final agreement is still pending on some tubular goods, tin and terne plate, tool steel and many special products.

New Extras on Wire Products Favor Buyer

Under the new code extras for wire products the previous base prices for nails, barbed wire, staples, black annealed wire and galvanized wire are reaffirmed. However, a separate price for mixed carloads has been eliminated, mixed carloads and straight carloads now taking the same price. To illustrate, under the former price classification straight carloads of wire nails took the base price of $2.10 per keg, mixed carloads a price of $2.20,

joint carloads a price of $2.30 and pooled carloads and less than carloads $2.40. Under the new extras, straight and mixed carloads both take the base price of $2.10, joint carloads take a price of $2.20 and pooled carloads and less than carloads a price of $2.40.

Jobbers are given a $2 a ton allowance on straight, mixed or joint carloads whether the shipments are direct to their warehouses or to their customers. The allowance on less-than-carload shipments is $3. Formerly allowances were made to jobbers only on shipments to their customers. A joint carload shipment, under the new provisions, is defined as one consigned to not more than two customers taking a minimum of 10 tons each. Formerly no tonnage minimum for a customer was specified.

Allowances to jobbers are contingent on their signing jobbers' agreements with the mills supplying them.

New rules apply on sheets or roofing added to a carload shipment above the minimum carload weight. Formerly it was necessary that the sheets and roofing be added to a minimum carload of a single wire product and the wire product still took the straight carload price. Now sheets or roofing may be added to a minimum carload of any number of wire products and the wire products will still move under straight, mixed or joint carload prices. However, if sheets or roofing are added to a carload of wire products to fill out the minimum carload weight, the wire products take the straight, mixed or joint carload prices, as the case may be, plus $2 a ton.

Wire and wire rod prices are unchanged, but a 15c. a 100 lb. extra for copper content on both products has been eliminated.

Delivered prices must be quoted on all wire products. All-rail published tariffs are to apply in all cases with the exception that rail-and-water rates may be used for shipments to South Atlantic, Gulf and Pacific ports.

Code Terms on Merchant Pipe

Code terms for the sale of merchant pipe will protect the jobbers against themselves. Out-of-stock minimum resale prices will be fixed by the mills and will represent the sum of the Pittsburgh (or other basing point) flat card, the carload freight rate and a fixed allowance for the jobbers' profit. Jobbers are required to qualify as jobbers and to sign agreements with mills. One of the stipulations agreed to is that no pipe will be sold at less than the minimum resale price established under the code. Heretofore, in certain large centers of distribution, competition among jobbers frequently wiped out the margin above the prices at which pipe was bought from the producers.

Jobber Allowances on Sheets

The only allowance to jobbers on sheets is a discount of $2 a ton on stock or direct shipments of galvanized sheets and painted roofings and sidings. No deductions are to be made until buyers have qualified as jobbers and have signed code agreements with mills.

Institute Committee Personnel Announced

Commercial Committee

S. E. HACKETT, vice-president, Jones & Laughlin Steel Corpn., Pittsburgh, chairman.

D. A. MERRIMAN, vice-president, American Steel & Wire Co., Chicago.

PAUL MACKALL, vice-president, Bethlehem Steel Co., Bethlehem, Pa.

B. E. FAIRLESS, vice-president, Republic Steel Corpn., Youngstown.

JAY J. ANDREWS, vice-president, American Sheet & Tin Plate Co., Pittsburgh.

H. A. ROEMER, president, Sharon Steel Hoop Co., Sharon, Pa.

W. W. HOLLOWAY, president, Wheeling Steel Corpn., Wheeling, W. Va.

J. J. KENNEDY, vice-president, National Tube Co., Pittsburgh.

D. B. GILLIES, president, Corrigan McKinney Steel Co., Cleveland.

F. B. HUFNAGEL, president, Crucible Steel Co. of America, New York.

C. V. McKAIG, vice-president, Carnegie Steel Co., Pittsburgh.

ALBERT WEIHL, general manager, Pollak Steel Co., Cincinnati.

J. M. GILLESPIE, vice-president, Lockhart Iron & Steel Co., Pittsburgh.

E. L. PARKER, president, Columbia Steel Shafting Co., Carnegie, Pa.

HAROLD HUGHES, assistant to president, United States Steel Corpn., New York.

C. L. WOOD, vice-president, United States Steel Corpn., New York.

CARL C. BROWN, vice-president, Gulf States Steel Co., Birmingham.

Statistical Committee

W. J. FILBERT, United States Steel Corpn., New York, chairman.

F. A. SHICK, Bethlehem Steel Co., Bethlehem, Pa.

A. W. VOGT, United States Steel Corpn., New York.

P. F. BOYER, Republic Steel Corpn., Youngstown.

C. G. KINGSBURY, American Rolling Mill Co., Middletown, Ohio.

F. B. BRUGLER, Bethlehem Steel Co., Bethlehem.

W. J. CREIGHTON, Jones & Laughlin Steel Corpn., Pittsburgh.

J. H. HALL, Youngstown Sheet & Tube Co., Youngstown.

Labor Committee

FRANK PURNELL, president, Youngstown Sheet & Tube Co., Youngstown, chairman.

RALPH WATSON, vice-president, United States Steel Corpn., New York.

R. J. WYSOR, vice-president, Republic Steel Corpn., Youngstown.

JOSEPH M. LARKIN, assistant to president, Bethlehem Steel Co., Bethelehem.

C. R. HOOK, president, American Rolling Mill Co., Middletown, Ohio.

A. J. McFARLAND, vice-president, Wheeling Steel Corpn., Wheeling, W. Va.

F. E. FIEGER, general manager, Jones & Laughlin Steel Corpn., Pittsburgh.

W. A. MAXWELL, JR., vice-president, Colorado Fuel and Iron Co., Denver, Colo.

J. C. WILLIAMS, president, Weirton Steel Co., Weirton, W. Va.

W. SYKES, vice-president, Inland Steel Co., Chicago.

L. E. GEOHEGAN, vice-president, Gulf States Steel Co., Birmingham.

JOSEPH B. ANDREWS, president, Andrews Steel Co., Newport, Ky.

W. B. GILLIES, vice-president, Youngstown Sheet & Tube Co., Youngstown.

C. W. BENNETT, acting president, American Sheet & Tin Plate Co., Pittsburgh.

Gage Differentials on Sheet Reduced

Gage differentials have been reduced from $1 to $4 a ton on galvanized sheets, heavier than No. 22 gage; hot-rolled annealed sheets, Nos. 17 to 23 gage; long ternes, Nos. 12 to 22 gage, and light cold-rolled sheets, Nos. 29 and 30 gage. The old and new differentials are shown in the following tables

New Gage Differentials

GALVANIZED SHEETS

	Old Differential	New Differential
No. 10 and heavier	—0.70c.	—0.50c.
No. 11	—0.65c.	—0.45c.
No. 12	—0.60c.	—0.40c.
No. 13	—0.55c.	—0.35c.
No. 14	—0.50c.	—0.30c.
No. 15	—0.45c.	—0.25c.
No. 16	—0.40c.	—0.25c.
No. 17	—0.35c.	—0.20c.
No. 18	—0.30c.	—0.15c.
No. 19	—0.25c.	—0.15c.
No. 20	—0.20c.	—0.10c.
No. 21	—0.15c.	—0.10c.
No. 22	—0.10c.	—0.05c.
No. 23	—0.05c.	—0.05c.
No. 24	base price	

Differentials for gages 25 to 30 are unchanged.

HOT-ROLLED ANNEALED SHEETS

	Old Differential	New Differential
No. 17	—0.35c.	—0.20c.
No. 18	—0.30c.	—0.15c.
No. 19	—0.25c.	—0.15c.
No. 20	—0.20c.	—0.10c.
No. 21	—0.25c.	—0.10c.
No. 22 and 23	—0.10c.	—0.05c.

LONG TERNE

	Old Differential	New Differential
No. 24	base	
No. 23	—0.05c.	—0.05c.
No. 22	—0.10c.	—0.05c.
No. 21	—0.15c.	—0.10c.
No. 20	—0.20c.	—0.10c.
No. 19	—0.25c.	—0.15c.
No. 18	—0.30c.	—0.15c.
No. 17	—0.35c.	—0.20c.
No. 16	—0.40c.	—0.25c.
No. 15	—0.45c.	—0.25c.
No. 14	—0.50c.	—0.30c.
No. 13	—0.55c.	—0.35c.
No. 12	—0.60c.	—0.40c.

Gage differentials on Nos. 25 to 30 are unchanged.

COLD-ROLLED SHEETS

	Old Differential	New Differential
No. 29	+0.60c.	+0.55c.
No. 30	+0.70c.	+0.65c.

Gage differentials on heavy cold-rolled sheets are unchanged.

Long Terne Sheets

Long terne sheets, unassorted, 8-lb. coating are quoted at 2.90c., Pittsburgh. Long terne seconds, when shipped with primes are 50c. per 100 lb. less than price for primes with seconds arising.

Long Terne Sheets—Gage Differentials

Gage No.		Per 100 lb.
12	Deduct	$0.40
13	Deduct	0.35
14	Deduct	0.30
15	Deduct	0.25
16	Deduct	0.25
17	Deduct	0.20
18	Deduct	0.15
19	Deduct	0.15
20	Deduct	0.10
21	Deduct	0.10
22	Deduct	0.05
23	Deduct	0.05
24 Unassorted	BASE	BASE
25	Add	0.15
26	Add	0.25
27	Add	0.35
28	Add	0.50
29	Add	0.75
30	Add	1.00

When estimating weight per square foot of long terne sheets use hot rolled annealed weights.

The grade on which the base price is predicated is 8 lb. to 12 lb. coating.

MISCELLANEOUS EXTRAS

	Per 100 lb.
12 lb. coating—Add	$0.35
15 lb. coating—Add	0.50

Coatings heavier than 15 lb. can be funished on orders amounting to 75 tons or more. The following extras per 100 lb. apply:

GAGE	20 lb.
30	$1.50
29	1.40
28	1.30
27 & 26	1.20
24 & 25	1.00
22 & 23	0.90
20 & 21	0.80

	Extra per 100 lb.
Full Finish	$0.50

DRAWING QUALITY

12 Ga. & heavier	$0.15
13 Ga.-21 Ga. inc.	0.25
22 Ga. & lighter	0.35

	Extra per 100 lb.
Patent or stretcher leveled (not resquared)	$0.40
Resquaring—side and end and/or sides and ends add 7½ per cent of net item price at time of resquaring. Any sheet that comes within resquaring tolerance the resquaring extra must be added.	
Copper bearing steel	$0.15
Primes only	0.20
Primes with seconds arising	0.10

Long Terne Sheets—Size Extras (Per 100 Lb.)

	LENGTH (INCHES) OVER			UNDER	
Gage	124 to 144	144 to 156	156 to 168	60 to 30	30 to 18
16 Ga. & hvr.	....	$0.25	$0.50	$0.10	$0.20
17-18	$0.10	0.50	0.75	0.20	0.30
19-21	0.10	0.50	0.75	0.20	0.30
22	0.10	0.50	....	0.20	0.30
23-24	0.10	....	....	0.20	0.30
25 Ga. & Ltr.	0.10	....	....	0.25	0.35

Size Extras, Per 100 Lb.

	WIDTH (INCHES) OVER										UNDER	
Gage	32 to 36	36 to 38	38 to 40	40 to 42	42 to 44	44 to 46	46 to 48	48 to 50	50 to 52	52 to 54	24 to 12	12 to 6	6 & under
12 Ga. & hvr.	....	....	....	$0.05	$0.10	$0.20	$0.20	$0.30	$0.35	$0.40	$0.20	$0.25	$0.50
13-15	....	....	....	0.05	0.10	0.20	0.20	0.30	0.35	0.40	0.20	0.25	0.50
16	....	$0.05	$0.05	0.05	0.10	0.20	0.20	0.30	0.35	0.45	0.20	0.25	0.50
17-18	....	0.05	0.05	0.05	0.10	0.20	0.25	0.35	0.40	0.55	0.20	0.30	0.60
19-21	....	0.10	0.15	0.15	0.30	0.35	0.40	0.45	....	....	0.20	0.30	0.60
22	....	0.20	0.30	0.35	0.45	0.55	0.65	0.80	....	....	0.20	0.30	0.60
23-24	....	0.25	0.35	0.45	0.55	0.65	0.75	0.90	....	....	0.20	0.30	0.60
25-26	....	0.30	0.45	0.65	0.75	0.85	1.00	....	....	....	0.25	0.35	0.70
27	$0.05	0.40	0.50	0.75	0.80	1.00	1.25	....	....	....	0.25	0.35	0.70
28	0.20	0.50	0.65	....	....	....	....	....	....	....	0.25	0.35	0.70
29-30	0.20	....	....	....	....	....	....	....	....	....	0.25	0.35	0.70

Spring Steels—Size Extras

ROUND AND SQUARE

⅝ to 2 in., inclusive	Base
½ to 9/16 in., inclusive	0.10c.
⅜ to 7/16 in., inclusive	0.25c.
5/16 in.	0.50c.
¼ and 9/32 in.	0.75c.

FLAT

1¼ to 6 in. x No. 4 to ½ in., inclusive	Base
1 and 1⅛ in. x No. 1 to No. 4, inclusive	0.10c.
1 to 3 in. x No. 5	0.15c.
1 to 3 in. x No. 6	0.20c.
1 to 3 in. x No. 7	0.25c.
¾ and 15/16 in. x No. 1 to No. 7	0.25c.
⅜ to 11/16 in. x No. 1 to No. 7	0.50c.
¾ to 3 in. x No. 8 to No. 10	0.50c.
¾ to 3 in. x No. 11 to No. 16	0.75c.
¾ to 3 in. x No. 17 to No. 20	1.10c.
⅜ to ⅝ in. x No. 10 to No. 16	2.00c.
⅜ to ⅝ in. x No. 17 to No. 20	2.50c.
⅜ to ⅝ in. x No. 21 to No. 24	3.00c.

BLOOMS, BILLETS AND SLABS

4 in. x 4 in. to under 10 in. x 10 in. or equivalent area	Base
	Per G. T.
10 in. x 10 in. to under 14 in. x 14 in. or equivalent area	$12.00
14 in. x 14 in. to under 16 in. x 16 in. or equivalent area	14.00
16 in. x 16 in. to under 20 in. x 20 in. or equivalent area	16.00
20 in. x 20 in. to under 24 in. x 24 in. or equivalent area	25.00
24 in. x 24 in. to under 30 in. x 30 in. or equivalent area	35.00
When weight per piece ordered is 12,000 lb. or over (In addition to above size extras)	10.00
(This extra shall not apply when product of ingot is accepted)	

NOTE: All sections under 4 x 4 in. or equivalent area will be sold only on bar basis. Slabs 16 sq. in. cross sectional area and 2½ in. thick or over will be sold on billet basis.

Under above dimensions as bars.

Extras for Machine Cutting to Specified Lengths

BLOOMS, BILLETS AND SLABS

	Per G. T.
Over 4 ft.	$4.00
Over 2 ft. to 4 ft., inclusive	6.00
Over 1 ft. to 2 ft., inclusive	8.00
1 ft. and less, extra will be furnished on application, but will not be less than	14.00

ROUNDS, SQUARES, HEXAGONS, OCTAGONS AND FLATS
½ IN. AND LARGER

	Hot Sawing and Hot Shearing	Machine Cutting
45 ft. and over	$1.50	$1.60
40 ft. to under 45 ft	1.00	1.10
35 ft. to under 40 ft	.50	.60
30 ft. to under 35 ft	.20	.30
25 ft. to under 30 ft	.15	.25
Over 4 ft. to under 25 ft	.10	.20
Over 2 ft. to 4 ft. inclusive	.15	.30
Over 1 ft. to 2 ft. inclusive	.30	.40
1 ft. and less—Extra will be furnished on application but will not be less than	.40	.70

Provided random lengths or 10 per cent shorts or multiples of not over 5 ft. are acceptable, extras for hot sawing or hot shearing lengths 5 ft. and over will not apply.

Random lengths which are acceptable follow:

5 ft. to 30 ft. acceptable with a 2 ft. leeway
30 ft. to 40 ft. acceptable with a 3 ft. leeway
40 ft. to 50 ft. acceptable with a 5 ft. leeway

Extras for Cracker Cutting to Specified Lengths

5 ft. to under 25 ft	.10
Over 4 ft. to, but not including 5 ft	.15
Over 2 ft. to 4 ft. inclusive	.225
Over 1 ft. to 2 ft. inclusive	.35

1 ft. and under on application.
25 ft. and over on application.

The above extras apply only to 0.40 per cent "mean" carbon and under where machine cutting or cracker cutting are involved.

Extras for machine-cutting over 0.40 per cent carbon will be furnished on application.

Extras for cutting sizes under ½ in. will be furnished on application.

Extras for Straightening

Machine straightening rounds 1½ in. and larger	0.10c.
Machine straightening rounds under 1½ in.	0.20c.
Machine straightening squares, hexagons and octagons, 1½ in. and larger	0.20c.
Machine straightening squares, hexagons and octagons under 1½ in.	0.30c.
Machine straightening flats 2 x ½ in. and larger	0.20c.
Machine straightening flats under 2 x ½ in.	0.50c.

Cold Shearing Extra Cost

Type of Steel	SAE Series	As Above	0.05/0.15 In.	0.10/0.20 In.	0.15/0.25 In.	0.20/0.30 In.	0.25/0.35 In.	0.30/0.40 In.	0.35/0.45 In.	0.40/0.50 In.	0.45/0.50 In.	0.50/0.60 In.
Nickel	2000	HR	4½	4½	...	...	...	...	...	...	...	...
		SR	4½	4½	...	...	...	...	...	...	...	...
	2100	HR	4½	4½	...	...	...	...	...	...	...	...
		SR	4½	4½	...	...	...	...	...	...	...	...
	2300	RR	4	3	2¾	2½	2	1¾	1½	1¼	1⅛	...
		SR	4	4	4	4	4	4	3¾	3⅛	3⅛	...
	2500	HR	3	3	2½	...	...	...	...	...	...	...
		SR	4	4	4	...	...	...	...	...	...	...
Nickel	3100	HR	3½	3½	3½	3	2¾	2¼	2	1¾	1½	...
Chromium	....	SR	4	4	4	4	4	4	4	4	4	...
	3200	HR	3	3	2½	2¼	2	1¾	1½	...	...	...
		SR	4	4	4	4	4	4	3¾	3⅛	3⅛	...
Chromium	4100	HR	3½	3½	3½	2¾	2½	2¼	2	...	...	...
Molybdenum	....	SR	4	4	4	4	4	4	4	3¾	3¾	...
Nickel	4600	HR	3	3	3	2½	...	...	...	...	...	...
Molybdenum	....	SR	4	4	4	4	...	...	...	...	...	...
Chromium	5100	HR	3	3	2½	2¼	2	1¾	1½	1⅜	1¼	...
		SR	4	4	4	4	4	4	3¾	3 7/16	3⅛	...
Chromium	6100	HR	3	3	2½	2¼	2	1¾	1½	1⅜	1¼	...
Vanadium	....	SR	4	4	4	4	4	4	3¾	3 7/16	3⅛	...
Chromium Nickel	....	HR	3	3	2½	2¼	2	1¾	1½	...	...	...
Molybdenum	....	SR	4	4	4	4	4	4	3¾	3⅛	3⅛	...
3½ per cent Nickel	....	HR	3	3	2½	...	...	...	...	...	...	...
Molybdenum	....	SR	4	4	4	...	...	...	...	...	...	...

Alloy and Special Steels

Alloy steel bars are quoted at 2.45c. a lb., base, Pittsburgh, Buffalo, Chicago, Bethlehem, and Canton and Massillon, Ohio, although a price of 2.55c. has been filed, which becomes effective Sept. 16. Alloy ingots, blooms, billets and slabs are sold on the carbon steel base plus extras for chemical composition as shown in the accompanying table. Basing points are the same as on alloy bars.

Extras for Alloy and Electric Furnace Quality

Grade S.A.E.	Open-Hearth Alloy Differentials: Bars, 100 Lb.	Open-Hearth Alloy Differentials: Billets, Gross Ton	Alloy and Electric Furnace Quality Differentials: Bars, 100 Lb.	Alloy and Electric Furnace Quality Differentials: Billets, Gross Ton
2000	$0.25	$5.00	$0.75	$15.00
2100	.55	11.00	1.05	21.00
2300	1.50	30.00	2.00	40.00
2500	2.25	45.00	2.75	55.00
3100	.55	11.00	1.05	21.00
3100—nickel 1.25/1.75	.65	13.00	1.15	23.00
3200	1.35	27.00	1.85	37.00
3400	3.20	64.00	3.70	74.00
3300	3.80	76.00	4.30	86.00
4100—0.15/0.25 moly	.50	10.00	1.00	20.00
4100—0.25/0.40 moly	.70	14.00	1.20	24.00
4600—0.20/0.30 moly. 1.50/2.00 nickel	1.05	21.00	1.30	26.00
5100—Under 0.60 chrome	.25	5.00	.60	12.00
5100—0.60/0.90 chrome	.35	7.00	.70	14.00
5100—0.80/1.10 chrome	.45	9.00	.80	16.00
5100—Spring flats	Base	Base	....	....
*6100—Bars	1.20	24.00	1.70	34.00
*6100—Spring flats	.70	14.00	....	....
*Nickel-chrome-vanadium	1.50	30.00	2.00	40.00
*Carbon vanadium	.95	19.00	1.45	29.00
*Silico vanadium — Sil. 0.50/0.70—Van. 15 Min.	1.60	32.00	2.10	42.00
Chrome nickel moly.—Cr. 0.50/1.00 Ni 1.50/2.25 Moly. 0.15/0.25	2.30	46.00	2.80	56.00
Chrome nickel moly.—Cr. 0.50/1.00 Ni 1.50/2.25 Moly. 0.25/0.40	2.50	50.00	3.00	60.00
3½ per cent nickel moly. Moly. 0.15/0.30	2.00	40.00	2.40	48.00
2½ per cent nickel-mang. —R. R. analysis	1.10	22.00	1.60	32.00
2 per cent nickel 1 per cent sil. bars	2.10	42.00	2.60	52.00
2 per cent nickel 1 per cent sil. springs	1.85	37.00	2.35	47.00
Mang.-moly.-mg. 1.40/1.70 —Mo. 0.15/0.25	.40	8.00	.90	18.00
Mang.-moly.-mg. 1.60/1.90 —Mo. 0.15/0.30	.50	10.00	1.00	20.00
Carbon moly.—Mo. 0.10/-0.20	.20	4.00	.70	14.00
Carbon moly.—Mo. 0.15/-0.25	.25	5.00	.75	15.00
2 per cent nickel iron—1.75/2.25 Nickel	2.05	41.00	2.55	51.00
Cr. 0.65/0.85 sil. 0.40/0.60 mang. 0.70/0.90—Flats	.60	12.00	1.10	22.00
Cr. 0.65/0.85 sil. 0.40/0.60 mang. 0.70/0.90 rds. and sqs	.85	17.00	1.35	27.00
52100	2.80	56.00	3.30	66.00
*Vanadium 0.18 Min	10c. per 100 lb. increase			
Vanadium 0.10 Min	10c. per 100 lb. reduction			
Vanadium 0.05/0.10 Min.	20c. per 100 lb. reduction			
Vanadium 0.01/0.05	35c. per 100 lb. reduction			

NOTE: Above the 0.15-0.25 molybdenum range add $0.05 per 100 lb. for each additional five points of molybdenum. The minimum of the range is to govern.

Extra for high sulphur. High manganese in accordance with carbon bar card of extras.

Size Extras

ROUNDS AND SQUARES, AND GOTHIC SECTIONS

3/4 to 3 1/16 in.	Base
5/8 to 11/16 in.	0.10c.
9/16 in.	0.15c.
1/2 in.	0.20c.
7/16 in.	0.30c.
3/8 in.	0.40c.
11/32 in.	0.55c.
5/16 in.	0.70c.
9/32 in.	0.85c.
1/4 in.	1.00c.
15/64 in.	1.25c.
7/32 in.	1.50c.
3/16 in.	2.00c.
3 1/8 to 3 9/16 in.	0.10c.
3 5/8 to 4 1/16 in.	0.15c.
4 1/8 to 4 9/16 in.	0.25c.
4 5/8 to 5 1/16 in.	0.35c.
5 1/8 to 5 9/16 in.	0.45c.
5 5/8 to 6 1/16 in.	0.55c.
6 1/8 to 6 9/16 in.	0.65c.
6 5/8 to 7 1/4 in.	0.75c.
7 5/16 to 7 3/4 in.	0.85c.
7 13/16 to 8 in.	1.10c.

HEXAGONS

3 9/16 to 4 1/8 in.	1.25c.
3 1/8 to 3 1/2 in.	1.10c.
1 5/8 to 3 1/16 in.	0.25c.
3/4 to 1 9/16 in.	0.125c.
5/8 to 11/16 in.	0.20c.
1/2 to 9/16 in.	0.35c.
7/16 in.	0.60c.
3/8 in.	0.90c.
5/16 in.	1.20c.
1/4 in.	1.50c.

OCTAGONS

3/4 to 3 1/16 in.	0.25c.
5/8 to 11/16 in.	0.40c.
1/2 to 9/16 in.	0.60c.
7/16 in.	0.80c.
3/8 in.	1.00c.
5/16 in.	1.20c.
1/4 in.	1.50c.

FLATS

Width in Inches	Thickness: 4 to 3 1/16	3 to 2 1/16	2 to 1 1/16	1 to 13/16	3/4 to 1/2	7/16 to 3/8	5/16 to 1/4
3/8	...	...	...	...	...	...	1.40
7/16	...	...	...	...	...	1.00	1.20
1/2	...	...	...	...	...	0.70	0.90
9/16	...	...	...	...	0.50	0.50	0.75
5/8 to 11/16	...	...	...	...	0.40	0.40	0.60
3/4 to 13/16	...	...	...	...	0.30	0.30	0.40
7/8 to 15/16	...	...	...	0.20	0.20	0.20	0.30
1 to 1 3/8	...	...	0.10	Base	Base	Base	0.15
1 7/16 to 2	...	...	0.10	Base	Base	Base	0.15
2 1/16 to 2 1/2	...	0.20	0.10	Base	Base	Base	0.15
2 9/16 to 3	...	0.20	0.10	Base	Base	Base	0.15
3 1/16 to 3 1/2	0.30	0.20	0.10	Base	Base	Base	0.15
3 9/16 to 4	0.30	0.20	0.10	Base	Base	Base	0.15
4 1/16 to 5	0.30	0.20	0.10	Base	Base	Base	0.15
5 1/16 to 12	0.30	0.20	0.10	Base	Base	Base	0.15

BANDS

Width in Inches	Thickness (Bands): Under 1/4 In. to 3/16 In. Incl.	No. 7 0.180	No. 8 0.165	No. 9 0.148	No. 10 0.134	1/8 0.125	No. 11 0.120	No. 12 0.109
3/8	1.60	1.60	1.60	1.60	1.70	1.70	1.70	1.80
7/16	1.30	1.30	1.30	1.30	1.40	1.40	1.40	1.50
1/2	1.10	1.10	1.10	1.10	1.15	1.15	1.15	1.25
9/16	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.05
5/8 to 11/16	0.80	0.80	0.80	0.80	0.85	0.85	0.85	0.90
3/4 to 13/16	0.65	0.65	0.65	0.65	0.70	0.70	0.70	0.75
7/8 to 15/16	0.55	0.55	0.55	0.55	0.60	0.60	0.60	0.65
1 to 1 3/8	0.50	0.50	0.50	0.50	0.55	0.55	0.55	0.60
1 7/16 to 2	0.45	0.45	0.45	0.45	0.50	0.50	0.50	0.55
2 1/16 to 2 1/2	0.40	0.40	0.40	0.40	0.45	0.45	0.45	0.50
2 9/16 to 3	0.40	0.40	0.40	0.40	0.45	0.45	0.45	0.50
3 1/16 to 3 1/2	0.40	0.40	0.40	0.40	0.45	0.45	0.45	0.50
3 9/16 to 4	0.40	0.40	0.40	0.40	0.45	0.45	0.45	0.50
4 1/16 to 5	0.40	0.40	0.40	0.40	0.45	0.45	0.45	0.50
5 1/16 to 6	0.40	0.40	0.40	0.40	0.45	0.45	0.45	0.50
6 1/16 to 8	0.40	0.40	0.40	0.40	0.45	0.45	0.45	0.50
8 1/16 to 10	0.40	0.40	0.40	0.40	0.45	0.45	0.45	0.50
10 1/16 to 12 1/2	0.45	0.45	0.45	0.45	0.50	0.50	0.50	0.60
12 9/16 to 15	0.50	0.50	0.50	0.50	0.60	0.60	0.60	0.70
15 1/16 to 24	0.55	0.55	0.55	0.55	0.70	0.70	0.70	0.80

Special Extras

Annealing or normalizing	$0.75
Pipe or box annealing	1.50
Does not include machine straightening. For machine straightening, see machine straightening extras.	
Heat treating	$1.50
Double treatment when annealing and normalizing are both specified or spheridise anneal	1.50
If any of the above are specified there will be no extra charge for machine straightening.	
Pickling	$0.15
Oiling	.10
Pickling and Liming	.25
Pickling and Oiling	.25

BAND SIZES

Pickling and Oiling or Liming

Widths under 1½ in.	$0.55
Widths 1½ in. and over	.40

COLD SHEARING

Guaranteed Cold Shearing Within Hot Rolled Limitations is Base

	Per 100 Lb.
Guaranteed cold shearing above hot rolled limitations, but not over stress relief limitation	25c.
Above stress relief limitation without cold shearing guarantee to consumer, material can be ordered pit annealed	25c.

See Cold Shearing Chart.

EXTRA FOR USE OF EXTENSOMETER FOR ELASTIC LIMIT DETERMINATION

Where the use of extensometer for elastic limit determination is specified ..... 25c. per 100 lb.

McQUAID EHN TEST

The A.S.T.M. Chart will be standard. Not less than three photos in sequence in the accepted range, irrespective of analysis.

ETCH TEST

Billets, blooms and slabs under 10 x 10 in. or equivalent cross section area ..... $5.00 per G. T.

DECARBURIZATION OF HOT HOLLED—UNANNEALED PRODUCTS

1 in. and under Max. 0.012 in. on a side

QUANTITY EXTRAS

Lump sum extras to apply to individual items of a size and grade ordered at one time for delivery at one time.

		Symbol
Less than 6,000 lb. and down to 4,000 lb.	$2.00	A
Less than 4,000 lb. and down to 2,000 lb.	4.00	B
Less than 2,000 lb. and down to 1,000 lb.	8.00	C
Under 1,000 lb	12.00	D

ROLLING TOLERANCE

Extras published in this card are based on furnishing material to alloy standard tolerances.

NOTE

This card gives a complete list of standard extras on alloy steels, but is not an indication of sizes companies are prepared to furnish. For intermediate sizes, the next higher extra to be charged in all cases. The gage of bands and spring steels is to be interpreted as Birmingham wire gage.

DEFINITION OF BARS

Bars are defined as all sizes under 4 x 4 in.
Billets for rerolling purposes take established billet prices.

Seamless Steel Commercial Boiler Tubes Basing Discounts and Differentials

Size O. D. in Inches	Quantities Up to 10,000 Lb. Consumer	Quantities Up to 10,000 Lb. Jobber	Quantities 10,000 Lb. to 24,999 Lb. Consumer	Quantities 10,000 Lb. to 24,999 Lb. Jobber	Quantities 25,000 Lb. to Carload— Consumer and Jobber	Carload or Over— Consumer and Jobber
HOT FINISHED						
*1½	58 and 10	62 and 10	62 and 10	64 and 10	68 and 10	70 and 10
*1¾	Off	Off	Off	Off	Off	Off
2 and 2¼	23-5	27-5	27-5	27-5 and 5	31-5 and 5	33-5 and 5
2½ and 2¾	30-5	34-5	34-5	34-5 and 5	38-5 and 5	40-5 and 5
3	37-5	41-5	41-5	41-5 and 5	45-5 and 5	47-5 and 5
3¼ and 3½	40-5	44-5	44-5	44-5 and 5	48-5 and 5	50-5 and 5
4	42-5	46-5	46-5	46-5 and 5	50-5 and 5	52-5 and 5
4½, 5, 5½ and 6	32-5	36-5	36-5	36-5 and 5	40-5 and 5	42-5 and 5
COLD DRAWN						
*1	58 Per Cent	62 Per Cent	62 Per Cent	64 Per Cent	68 Per Cent	70 Per Cent
*1¼ and 1½						
*1¾	Off	Off	Off	Off	Off	Off
2 and 2¼	17-5	21-5	21-5	21-5 and 5	25-5 and 5	27-5 and 5
2½ and 2¾	24-5	28-5	28-5	28-5 and 5	32-5 and 5	34-5 and 5
3	31-5	35-5	35-5	35-5 and 5	39-5 and 5	41-5 and 5
3¼ and 3½	34-5	38-5	38-5	38-5 and 5	42-5 and 5	44-5 and 5
4	36-5	40-5	40-5	40-5 and 5	44-5 and 5	46-5 and 5
4½, 5, 5½ and 6	26-5	30-5	30-5	30-5 and 5	34-5 and 5	36-5 and 5

*Off mechanical tubing list.
Basing point f.o.b. Pittsburgh.
No extra for lengths 1′ 0″ to 24′ 0″ inclusive.

Iron Ore Industry Files Code With NRA

A CODE for the Lake Superior Iron Ore industry has been prepared by the Lake Superior Iron Ore Association and filed with the NRA. A management board consisting of five persons to be elected annually by written vote of the signers of the code within two weeks after its approval is provided for. A minimum wage rate of 40c. an hr. for common labor is stipulated. This is the minimum rate at present. Employees are to be limited to 8 hr. a day and to an average of 40 hr. a week in any calendar month. This does not apply to executives, those employed in advisory capacity or in technical work or in emergency work. No regulations for hours and pay are provided for clerical help. The standard clause relating to collective bargaining is included.

Place License Plate Requirements on Coast

THE State of California has awarded 2700 tons of black sheets for its 1934-35 license plates to the Columbia Steel Co. The State of Washington has placed 150 tons of cold-rolled sheets for license plates for 1934 to the Seattle Hardware Co.

▲▲▲ PERSONALS ▲▲▲

SEVERN P. KER, chairman of the board, Sharon Steel Hoop Co., with plants at Sharon, Pa., Lowellville, Ohio, and Youngstown, will retire from active interest in the company on Oct. 1. He will retain his directorship. In 1885, Mr. Ker situated at Pittsburgh with Smith, Sutton & Co., later known as LaBelle Steel Co., of which he was successively assistant secretary and secretary. In 1899, he became general manager of sales for the American Steel Hoop Co. and soon after was appointed vice-president. He subsequently joined the Crucible Steel Co. In January, 1905, he went with the Republic Iron & Steel Co. and in April of that year became vice-president of the company. On Oct. 1, 1909, he was made general manager of the Sharon Steel Hoop Co. and in February, 1920, was elected president, which office he held until his appointment as chairman of the board in 1930.

HENRY A. ROEMER, president, is expected to fill concurrently his present office and that of chairman. Prior to his association with the Sharon company, he was identified with American Sheet Steel Co., Youngstown Sheet & Tube Co. and Canton Sheet Steel Co. He was instrumental in organizing the Superior Sheet Steel Co., Canton, in 1919, and served as president of that company until 1927, when it was merged with the Chapman-Price Steel Co., Indianapolis, and the Kokomo Steel & Wire Co., Kokomo, Ind., to form the Continental Steel Corpn. He was president of the Continental company from 1927 to 1930, and on Jan. 1, 1931, assumed the presidency of the Sharon company.

B. E. KIBBEE, vice-president of the company since 1928, has been appointed executive vice-president. A. S. BOOTH, general sales manager since 1928, has been made vice-president in charge of sales. Both Mr. Kibbee and Mr. Booth have been identified with the Sharon company for more than 25 years and practically all of that time in the general offices in Sharon. Mr. Booth holds a Croix de Guerre for gallant and meritorious service in the Army during the World War. J. MILTON HUGHES, of Youngstown, general manager of operations for the past two years, has been elected vice-president in charge of operations. He has been connected with the company in various operating capacities since 1901, having become general manager of operations in 1931. THOMAS M. GALBREATH, assistant general manager of sales since 1928, has been appointed general manager of sales. He started with the company at the close of the World War, having served as manager of the Philadelphia and Cleveland district offices prior to his tenure as assistant sales manager.

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WILLIAM MCWANE has been elected president of the McWane Cast Iron Pipe Co., Birmingham. He is a son of the late J. R. McWane, founder and president of the company. The new president has been connected with the company since its formation in 1922. J. D. SAMPLE, heretofore vice-president, has been named executive vice-president, while A. T. MCWANE becomes vice-president, in addition to being secretary-treasurer.

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DR. COLIN G. FINK, professor of electrochemistry, Columbia University, and secretary of the Electrochemical Society, has been presented with the Edward Goodrich Acheson Medal for outstanding service to the Electrochemical Society and the promotion of its objects. Presentation was made Sept. 7 at Chicago, where the Society held an international convocation on corrosion and celebrated the Faraday Centennial.

SEVERN P. KER

HENRY A. ROEMER

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E. J. MURRAY has been appointed Chicago district sales manager for the Highland Iron & Steel Co., Terre Haute, Ind., a subsidiary of the American Chain Co., Bridgeport, Conn. He succeeds W. G. WOLFE, who recently was made vice-president in charge of sales for the Reading Iron Co., Philadelphia. Mr. Murray has been with the Highland Iron & Steel Co. for 20 years and has been in the iron and steel industry for over 30 years.

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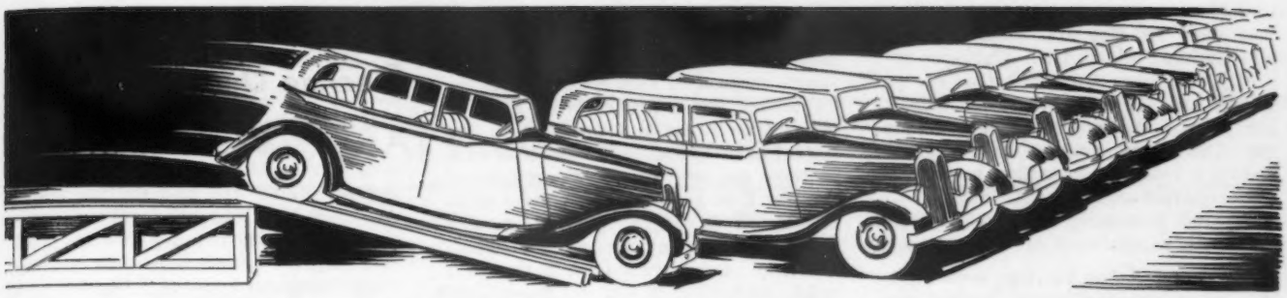
A. L. KIMBALL has been transferred from the staff of the research laboratory of General Electric Co., Schenectady, to the engineering general department. In his new position Mr. Kimball will be associated with A. R. STEVENSON, JR., and will assist all design engineering departments of the company on problems involving ventilation, vibration and noise, cooperating closely with the laboratories. Succeeding Mr. Kimball, E. L. THEARLE will direct the activities of the mechanical research section of the research laboratory. Mr. Kimball was graduated from Amherst College in 1908. In 1912 he entered Harvard Engineering School, graduating in 1914 with the degree of Master of Electrical Engineering. In 1915 and 1916 he was assistant electrical engineer for the Interborough Rapid Transit Co., working on the design of feeder and substation layouts in connection with the new extensions being put through at that time. In 1917 and 1918 he was instructor in mathematics at Amherst College. In 1918 he entered the employ of the General Electric Co. as an engineer in the research laboratory. Since that time he has been occupied with mechanical problems involving fundamentals of vibration damping and noise preventions. Mr. Kimball has published a number of articles on the subject of vibration damping, shaft vibrations, stress analysis by polarized light, etc.

Mr. Thearle was graduated from Cornell University in 1921 with the degree of Mechanical Engineer. He remained there through 1925 as an instructor in the mechanical engineering department, and then for three years was in charge of the mechanical engineering department at the University of Arkansas. Since 1928 he has been in the mechanical research section of the General Electric research laboratory. His work on dynamic balancing, both in the development of a new balancing machine for the rapid and accurate balancing of small rotors, and in the development of method and apparatus for obtaining in three runs an exact balancing of rotors in their own bearings, has been outstanding in originality and importance.



▲▲▲ THIS WEEK ON THE ASSEMBLY LINE ▲▲▲

Steel Users Give Heavy Releases on Old Contracts

DETROIT, Sept. 12.

AUTOMOTIVE users of steel the past week have given fairly heavy releases to mills on old contracts and are endeavoring wherever possible to take in material in anticipation of the higher prices which will prevail for the fourth quarter. Chrysler has supplemented its heavy orders placed a week ago with further specifications, and its total purchases in the last two weeks are said to cover requirements for about 200,000 units. Chevrolet is said to have bought steel, principally for its local plants, amounting to 50,000 tons and probably before the end of the month will give substantial releases for sheets for its Flint, Mich., plant. Ford is the sole member of the Big Three which continues reluctant to buy steel beyond current needs.

Numerous efforts are being made by consumers to "get under the wire" before higher prices take effect. In some cases they have asked mills to stretch the tonnage specified in contracts and in others to transfer tonnages from one item to another. For instance, a user with a contract for 2000 tons of hot-rolled sheets and 3000 tons of cold-rolled has requested the entire 5000 tons in cold-rolled sheets. In still other cases automotive companies, with steel contracts which expire on Sept. 15, have sought extension until the end of the month of the time during which they may specify tonnage on current contracts. Without exception mills have declined to depart from the letter of their contracts and users are discovering that special privileges which they enjoyed for years have been abolished.

New problems are arising daily under the steel code, and automobile buyers are studying it as thoroughly as steel companies to find any loop holes to escape from some of the restrictions. Water shipment is a particularly sore spot with the automotive trade. Some companies have invested large sums in equipment to handle steel coming into their plants by water, thereby making a considerable saving in transportation costs. However, under the code, they cannot secure these economies, as they must pay the all-rail rate from the basing point to their factories. Trucking companies are alleging that the steel industry, perhaps unwittingly, is aiding the railroads in trying to put them out of business. There also is slight inducement to users to take delivery of steel at the mills, because even then they must pay 65 per cent of the all-rail rate. Add to this the actual trucking charge from the mill to the user's plant and any anticipated saving disappears.

Sales Continue Impressive

IMPRESSIVE retail automobile sales figures continue to accumulate. Ford has announced that its passenger car sales in August were the largest since June, 1932, and its truck sales the best since Oct., 1931. Retail deliveries for all divisions of the Chrysler Corpn. reached the year's peak the week ended Sept. 2. Domestic retail passenger car sales in August are estimated at 185,000 to 190,000 units, compared with 185,660 in July and 93,457 in August of 1932. In fact, it was the biggest August since 1930. General Motors' sales to consumers last month totaled 86,372 units, only a shade below the 87,298 units in July and more than double the 37,230 units in the corresponding month of last year. Retail deliveries exceeded production by almost 2000 units.

September schedules have been changed only slightly in the past week. Chevrolet is expected to assemble 53,000 to 55,000 cars, Pontiac 8000, Buick and Oldsmobile 3500 each, Cadillac 500. This will give General Motors a total production of close to 70,000 cars. Plymouth has advanced its assemblies this month to 35,374 units in response to increased retail demand. Dodge will make 15,000 cars, and Chrysler and De Soto together at least 5000. This makes a minimum of 55,000 for Chrysler Corpn. Ford has announced that its production rate this month will parallel that of August, which is reported at 58,000 cars.

Car Prices May Increase

The advance of about $200 on each of its 1934 models by the Packard Motor Car Co. confirms the fact that motor car prices next year will be higher. It is conservatively estimated that for many grades of steel automobile companies will have to pay 30 per cent more. The cost of other materials has gone up proportionately. Wages are up 20 per cent, but that figure does not represent the extent of the advance in labor expense, for to it must be added the extra cost of shortening hours and taking on more men. Until the code went into effect, the labor cost on a car selling for $475 to $500 was about $50. Because many of the factors contributing to the cost of manufacturing automobiles have not yet been determined for 1934, it is impossible to predict accurately how much more the public will have to pay next year for a Chevrolet, Ford or Plymouth. However, some observers with an intimate knowledge of the industry will not be surprised if list prices are $50 to $75 more than on current models.

ALLOY steel in the manufacture of transmission gears is making good headway. It is a low carbon, carburizing, electric furnace steel, containing 1 to 2 per cent nickel and 0.20

to 0.30 per cent molybdenum. It first was used by Reo and about a year ago Cadillac adopted it. Chrysler recently has gone to it for two of its models and it may become standard for all Chrysler jobs. Chrysler is the first manufacturer to start its use on a volume production basis. Its best characteristic is its ability to withstand unusually high tooth pressure with a minimum of tooth wear.

The Ford Motor Co. has been making wage readjustments during the past month ranging from 40c. to $1.00 above the present minimum of $4.00 a day according to an announcement by a spokesman for the company. The increases apply to virtually all classes of labor. Under the new scale the employee formerly getting 50c. an hr. is paid 55c. It is understood that some of the highly skilled labor is now receiving $1.50 an hr. The Rouge plant has been operating 40 hours a week since Aug. 1. Under the automobile code which Mr. Ford refuses to sign the minimum wage for the industry is 43c. an hour and the work limit is 35 hr. a week.

Detroit Notes

The coil springs for the 1934 Buick will be fabricated from S.A.E. No. 9260 silica manganese centerless ground alloy steel bar stock. . . After using hot-rolled pickled and deoxidized sheets instead of cold-rolled sheets for its bodies for many months, Ford is understood to have gone back to the latter. The so-called Fordsteel is said to have become far less economical than at first anticipated as steel mills began adding extras. . . A leading automobile company bought a small quantity of cold-rolled strip the past week, on which it did not have contract coverage, paying $15 a ton more without attempting any resistance. . . . Ford is continuing to liquidate its pig iron stocks at Rouge. In addition to shipping iron to its suppliers, such as Campbell, Wyant & Cannon, it has shipped 2500 tons by water to a merchant iron user at Buffalo. . . One manufacturer is contemplating adoption of a rustless steel bead around the edges of its front fenders as well as a similar bead on the running boards. . . Chrysler is now the largest employer of labor in Detroit. . . . Budd Wheel Co. is suing General Motors for infringement of patents relating to the artillery type steel wheel. . . Murray is producing 1500 steel quarter barrels daily for the brewing trade.

▲▲▲ OBITUARY ▲▲▲

FRED GRIFFITHS, manager of the roll department, Pittsburgh Steel Foundry Corpn., Glassport, Pa., died at his Pittsburgh home on Sept. 6, after a brief illness. A native of England, he came from a family that for several generations was active in the iron and steel industry in England and Wales. His early association with the steel industry was at Chicago with the Illinois Steel Co. at its South Chicago works. In 1894 he came to Pittsburgh, where for 36 years he was connected with the A. Garrison Foundry Co. and its successor, Mackintosh-Hemphill Co. In 1930 he became associated with the Duquesne Steel Foundry Division of the Continental Roll & Steel Foundry Co., and for the past two years he was identified with the Pittsburgh Steel Foundry Corpn.

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GUERDON L. BREWSTER, secretary and a director of the Chicago Hardware Foundry Co., North Chicago, Ill., died Sept. 6 in the Victory Memorial Hospital, Waukegan, Ill.

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FRANK W. MILLER, formerly coke plant manager and vice-president of the Sloss-Sheffield Steel & Iron Co., Birmingham, died of heart disease on Sept. 4. For a number of years prior to 1920 Mr. Miller had been superintendent of the Semet-Solvay coke plant at Holt, Ala. In 1920 he was transferred to the Ensley, Ala., plant of the Semet Solvay Co. Later he went with Sloss-Sheffield as manager of its North Birmingham by-products plant. In 1926 he was elected a vice-president. Two years ago he left the company and organized the Miller-Curtis Oil Co., for the reclamation of used lubricating oil.

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KENNETH A. KEMMERER, assistant to the traffic manager in charge of terminal railroads, Bethlehem Steel Co., died after a brief illness in the Lankenau Hospital, Philadelphia, on Aug. 29, aged 42 years. He had been identified with the Bethlehem Steel Co. for the past 18 years.

FRED GRIFFITHS

Unfilled Steel Orders Decline During August

THE unfilled orders of the United States Steel Corpn. declined 129,681 tons during August, again dropping sharply under the two million mark. At 1,890,444 tons, the corporation's obligations reached the lowest point since April 30, and were only slightly above the record low of 1,841,002 tons reached on March 31, 1933. The decrease in August followed a smaller decline of 86,546 tons during July after three successive gains in April, May and June.

The August loss was not unexpected and is in keeping with seasonal precedent. Even though a minor increase of 3293 tons was recorded in August, 1932, the month usually reflects a sharp drop. On Aug. 31, 1932, unfilled tonnage stood at 1,969,595, compared with 3,169,457 tons on Aug. 31, 1931.

The Steel Corporation's unfilled tonnage at the end of each month since 1930 is shown in the following table:

	1933 Tons	1932 Tons	1931 Tons
January	1,898,644	2,648,150	4,132,351
February	1,854,200	2,545,629	3,965,194
March	1,841,002	2,472,413	3,995,330
April	1,864,574	2,326,926	3,897,729
May	1,929,815	2,177,162	3,620,452
June	2,106,671	2,034,768	3,479,323
July	2,020,125	1,966,302	3,407,816
August	1,890,444	1,969,595	3,169,457
September	.....	1,985,090	3,144,833
October	.....	1,997,040	3,119,432
November	.....	1,968,301	2,933,891
December	.....	1,968,140	2,735,353

British Steel and Iron Output for August

LONDON, ENGLAND, Sept. 12 (*By Cable*)—Output of ingots in the United Kingdom dropped slightly in August from the July figures, the decline amounting to 16,200 tons. This is the third consecutive monthly decline since the high month of May of this year.

British pig iron, in contrast with steel, registered a gain of 18,800 tons in August, making this month the high for the year at 362,700 tons.

Monthly totals for 1932 and for the first seven months of this year are shown below:

1932	Pig Iron	Steel Ingots
Jan.	332,400	429,700
Feb.	318,100	480,600
March	335,600	462,800
April	316,900	433,300
May	315,300	416,900
June	311,400	459,300
July	292,600	430,300
Aug.	259,400	361,500
Sept.	260,400	430,300
Oct.	275,600	438,500
Nov.	267,700	473,800
Dec.	284,500	430,400
	3,569,900	5,247,400
1933		
Jan.	286,600	444,400
Feb.	270,800	482,700
March	332,200	577,700
April	324,700	513,300
May	339,900	599,600
June	345,600	568,800
July	343,900	567,500
Aug.	362,700	551,300

SUMMARY OF THIS WEEK'S BUSINESS

Output Falls Further as Industry Continues to Wrestle with Code Problems

Ingot Rate Declines From 45 to 41 Per Cent of Capacity—September Regarded as Critical Month—Advances in Strip, Sheets and Alloy Bars

WITH the steel trade still wrestling with the details of filing prices and standardizing market practices under its new code, mill bookings and operations continue to decline. The national average of ingot output has fallen four points from 45 to 41 per cent. Further losses were reported in the Valleys, in the Cleveland-Lorain district, in eastern Pennsylvania, in the Wheeling area and at Chicago. Only the Buffalo district showed an increase, its rate rising from 41 to 44 per cent.

While perplexities growing out of new code prices and regulations have undoubtedly played their part in checking buying, there are increasing evidences that consumption itself is diminishing. In many cases labor difficulties are blamed for the shrinkage in demand, but whatever the reasons there is growing apprehension over the current business trend and an increasing conviction that September will prove the critical month in the NRA program.

AS the automobile industry approaches the time when it will bring out its new models, the need for support from the heavy industries becomes more pressing. Government-aid construction projects are slow in maturing, although pressure from Washington ton has hastened the taking of bids on 16,000 tons of steel for the Tri-Borough Bridge, New York, and 52,000 tons of cast iron segments for the mid-town Hudson River tunnel, New York.

Railroad buying remains at a low ebb and for that reason proposals of the Government to help finance expenditures for the carriers are of timely interest to the steel trade. The announcement that rail purchases would be financed only on condition that prices be reduced was, however, regarded as out of keeping with the spirit of the recovery program. Rails are a high-quality product, necessarily so because human safety depends upon their soundness, and yet they are now being quoted at $4.33 a gross ton below the average price of all other finished steel commodities as measured by THE IRON AGE steel composite. Moreover, mill costs are steadily rising, in the case of certain producers having gone up $7 to $8 a ton since the middle of the year. Yet in the face of these facts the steel industry would undoubtedly go a long way to insure the success of the present national effort for recovery. If enough rail tonnage were offered under Government auspices, it is possible that mills would agree to a reduction in price, keeping in mind, of course, that their costs are closely related to volume.

STEEL releases have been very light except in certain products on which advances have been announced for the fourth quarter. In connection with these lines buyers are hastening to specify against their third quarter contracts. Advances for the fourth quarter announced during the week include increases of $2 a ton on hot-rolled sheets, hot-rolled strip and alloy steel bars, $3 a ton on fender stock and cold-rolled strip, $4 a ton on billet light rails, and $6 a ton on rail-steel light rails.

NEW code extras have not yet been officially adopted, since modifications are still being made. Some of the changes in selling terms provisionally made have raised a storm of protest among consumers. Buyers in the Chicago district are particularly strong in their opposition to the stipulation that all-rail freight rates be charged on all shipments except to South Atlantic, Gulf and Pacific ports.

Some of the new extras which have come to light are more favorable to buyers than those which they superseded. For example, in the case of sales of merchant wire products to jobbers, mixed carloads will take the same price as straight carloads.

An incidental result of the adoption of the steel code is that the Steel Corporation unfilled tonnage reports in the future will not reflect bookings beyond the succeeding quarter.

Scrap markets are weak throughout the country. Declines of 25c. a ton at Pittsburgh and 75c. a ton at Philadelphia have reduced THE IRON AGE scrap composite from $11.75 to $11.42 a gross ton. The pig iron and finished steel composites are unchanged at $16.71 a gross ton and 1.979c. a lb.

▲▲▲ A Comparison of Prices ▲▲▲

Market Prices at Date, and One Week, One Month and One Year Previous
Advances Over Past Week in Heavy Type, Declines in Italics

Pig Iron

	Sept. 12, 1933	Sept. 6, 1933	Aug. 15, 1933	Sept. 13, 1932
Per Gross Ton:				
No. 2 fdy., Philadelphia	$18.34	$18.34	$17.34	$13.84
No. 2, Valley furnace	17.50	17.50	16.50	14.50
No. 2 Southern, Cin'ti	18.23	18.23	17.73	13.82
No. 2 Birmingham	13.50	13.50	13.00	11.00
No. 2 foundry, Chicago*	17.50	17.50	17.00	15.50
Basic del'd eastern Pa.	17.84	17.84	17.09	13.50
Basic, Valley furnace	17.00	17.00	16.00	13.50
Valley Bessemer, del'd P'gh.	19.89	19.89	18.89	16.89
Malleable, Chicago*	17.50	17.50	17.00	15.50
Malleable, Valley	17.50	17.50	16.50	14.50
L. S. charcoal, Chicago	23.67	23.67	23.17	23.17
Ferromanganese, seab'd carlots	82.00	82.00	82.00	68.00

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.

Rails, Billets, etc.

Per Gross Ton:				
Rails, heavy, at mill	$40.00	$40.00	$40.00	$43.00
Light rails at mill	**34.00**	30.00	30.00	32.00
Rerolling billets, Pittsburgh	26.00	26.00	26.00	26.00
Sheet bars, Pittsburgh	26.00	26.00	26.00	26.00
Slabs, Pittsburgh	26.00	26.00	26.00	26.00
Forging billets, Pittsburgh	31.00	31.00	31.00	33.00
Wire rods, Pittsburgh	35.00	35.00	35.00	37.00
	Cents	Cents	Cents	Cents
Skelp, grvd. steel, P'gh, lb.	1.60	1.60	1.60	1.60

Finished Steel

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Bars, Pittsburgh	1.60	1.60	1.60	1.60
Bars, Chicago	1.65	1.65	1.70	1.70
Bars, Cleveland	1.65	1.65	1.65	1.65
Bars, New York	1.95	1.95	1.95	1.95
Tank plates, Pittsburgh	1.60	1.60	1.60	1.60
Tank plates, Chicago	1.65	1.65	1.70	1.70
Tank plates, New York	1.898	1.898	1.898	1.898
Structural shapes, Pittsburgh	1.60	1.60	1.60	1.60
Structural shapes, Chicago	1.65	1.65	1.70	1.70
Structural shapes, New York	1.86775	1.86775	1.86775	1.86775
Cold-finished bars, P'gh	1.95	1.95	1.70	1.70
Hot-rolled strips, Pittsburgh	1.65	1.65	1.65	1.45
Cold-rolled strips, Pittsburgh	2.25	2.25	2.25	1.90

Finished Steel

Per Lb. to Large Buyers:	Sept. 12, 1933 Cents	Sept. 6, 1933 Cents	Aug. 15, 1933 Cents	Sept. 13, 1932 Cents
Hot-rolled annealed sheets, No. 24, Pittsburgh	2.25	2.25	2.25	2.10
Hot-rolled annealed sheets, No. 24, Chicago dist. mill	2.35	2.35	2.35	2.20
Sheets, galv., No. 24, P'gh	2.85	2.85	2.85	2.75
Sheets, galv., No. 24, Chicago dist. mill	2.95	2.95	2.95	2.85
Hot-rolled sheets, No. 10, P'gh	1.65	1.65	1.65	1.55
Hot-rolled sheets No. 10, Chicago dist. mill	1.75	1.75	1.75	1.65
Wire nails, Pittsburgh	2.10	2.10	2.10	1.95
Wire nails, Chicago dist. mill	2.15	2.15	2.15	2.00
Plain wire, Pittsburgh	2.10	2.10	2.10	2.20
Plain wire, Chicago dist. mill	2.15	2.15	2.15	2.25
Barbed wire, galv., Pittsburgh	2.60	2.60	2.60	2.60
Barbed wire, galv., Chicago dist. mill	2.65	2.65	2.65	2.65
Tin plate, 100-lb. box, P'gh	$4.65	$4.65	$4.25	$4.75

Scrap

Per Gross Ton:				
Heavy melting steel, P'gh	*$13.00*	$13.25	$14.00	$9.50
Heavy melting steel, Phila	*11.25*	12.00	12.00	7.25
Heavy melting steel, Ch'go	10.00	10.00	10.25	6.25
Carwheels, Chicago	10.50	10.50	10.50	7.00
Carwheels, Philadelphia	12.75	12.75	12.75	9.50
No. 1 cast, Pittsburgh	11.75	11.75	11.75	10.00
No. 1 cast, Philadelphia	12.50	12.50	12.50	9.50
No. 1 cast, Ch'go (net ton)	10.00	10.00	10.50	6.25
No. 1 RR. wrot., Phila	12.00	12.00	12.00	7.50
No. 1 RR. wrot., Ch'go (net)	9.00	9.00	9.00	5.00

Coke, Connellsville

Per Net Ton at Oven:				
Furnace coke, prompt	$2.50	$2.50	$2.50	$2.00
Foundry coke, prompt	3.25	3.25	2.75	2.75

Metals

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Electrolytic copper, refinery	8.75	8.75	8.75	6.00
Lake copper, New York	9.00	9.00	9.00	6.37½
Tin (Straits), New York	**46.00**	45.50	43.75	24.50
Zinc, East St. Louis	*4.65*	4.70	5.00	3.45
Zinc, New York	*5.02*	5.07	5.37	3.82
Lead, St. Louis	4.35	4.35	4.35	3.45
Lead, New York	4.50	4.50	4.50	3.60
Antimony (Asiatic), N. Y.	*6.75*	6.87½	7.00	5.75

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our detailed price tables.

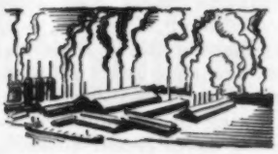
▲ ▲ ▲

▲▲▲ The Iron Age Composite Prices ▲▲▲

	Finished Steel	Pig Iron	Steel Scrap
Sept. 12, 1933	1.979c. a Lb.	$16.71 a Gross Ton	$11.42 a Gross Ton
One week ago	1.979c.	16.71	11.75
One month ago	1.979c.	15.94	12.08
One year ago	1.965c.	13.64	7.67
	Based on steel bars, beams, tank plates, wire, rails, black pipe, sheets and hot-rolled strips. These products make 85 per cent of the United States output.	Based on average of basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Birmingham.	Based on No. 1 heavy melting steel quotations at Pittsburgh, Philadelphia and Chicago.

	Finished Steel High	Finished Steel Low	Pig Iron High	Pig Iron Low	Steel Scrap High	Steel Scrap Low
1933	1.979c., Aug. 8	1.867c., Apr. 18	$16.71, Aug. 29	$13.56; Jan. 3	$12.25, Aug. 8	$6.75, Jan. 3
1932	1.977c., Oct. 4	1.926c., Feb. 2	14.81, Jan. 5	13.56, Dec. 6	8.50, Jan. 12	6.42, July 5
1931	2.037c., Jan. 13	1.945c., Dec. 29	15.90, Jan. 6	14.79, Dec. 15	11.33, Jan. 6	8.50, Dec. 29
1930	2.037c., Jan. 14	2.018c., Dec. 9	18.21, Jan. 7	15.90, Dec. 16	15.00, Feb. 18	11.25, Dec. 9
1929	2.317c., April 2	2.273c., Oct. 29	18.71, May 14	18.21, Dec. 17	17.58, Jan. 29	14.08, Dec. 3
1928	2.286c., Dec. 11	2.217c., July 17	18.59, Nov. 27	17.04, July 24	16.50, Dec. 31	13.08, July 2
1927	2.402c., Jan. 4	2.212c., Nov. 1	19.71, Jan. 4	17.54, Nov. 1	15.25; Jan. 11	13.08, Nov. 22

Demand Still Declining at Pittsburgh



Steel Output Barely Holding at 34 Per Cent—Valley Operations Ease Off to 45 Per Cent and Wheeling District Rate Recedes to 75 Per Cent

PITTSBURGH, Sept. 12.—Leading producers have opened their books on most steel products for fourth quarter. With few exceptions, prices in effect for September will be applied to bookings for the ensuing quarter. Fourth quarter schedules on hot-rolled sheets, No. 10 gage, provide for a $2 a ton advance to 1.75c., and a similar increase will be instituted on hot-rolled annealed, No. 10 gage, to 1.90c., Pittsburgh. All other finishes of sheets will remain unchanged. Hot-rolled strip steel will be marked up $2 a ton to 1.75c. and cold-rolled $3 a ton to 2.40c., Pittsburgh.

The 1.60c., Pittsburgh, price on soft steel bars, structural plates and shapes has been reaffirmed, and likewise the current quotation of 1.90c. on steel sheet piling.

Announcement on the 1934 tin plate price is not expected until some time next month. In the meantime, the new set-up on tin plate is in the process of clarification, and definite establishment of details covering concessions and extras will probably not be accomplished until the end of this week. Although the cold-finished bar price for next quarter has not been posted, no change from the current schedule is expected.

The past week brought little change in the character of steel demand. Current demand is centered chiefly in full-finished sheets for the automotive industry and in tin plate for the canning trade. Miscellaneous interest is somewhat apathetic. Heavy hot-rolled items still are notably quiet, although the outlook for these products has been considerably brightened by more assured prospects of extensive railroad replacement buying, which is being fostered by proposed Federal cooperation with the carriers. Meanwhile, normal functioning of sales offices continued to be hampered by unsettled code details, and much routine business is being deferred until interpretations of extras, etc., become uniform.

With new business failing to fill the gap of generally completed backlogs, steel ingot output in the Pittsburgh district is barely sustained at 34 per cent of capacity. Production in the Valleys and nearby northern Ohio mills is scheduled this week at about 45 per cent, while operations in the Wheeling district are off five points to 75 per cent.

Raw materials markets are lifeless. Pig iron quotations have been reestablished for fourth quarter, but demand is nil. No. 1 heavy melting steel scrap has declined to $12.50 to $13.50.

Pig Iron

Sellers have opened their books for acceptance of fourth quarter business at the recently established prices. The market is devoid, however, of large-lot forward inquiry. Carload buying against spot requirements is also unusually light. Most third quarter contracts have been completed. Some imperative replenishment of stocks is considered likely during the remainder of the month, but specific interest is very slow in appearing. Prices are very firm, though largely nominal.

Semi-Finished Steel

The leading producers have designated current prices on semi-finished steel products to apply for fourth quarter delivery. Forward interest thus far is lacking. Demand for sheet bars is at present the only bright spot and is sustained chiefly by insistent calls from the tin plate industry. Sheet and strip mills, though fairly well engaged, continue to draw chiefly from inventories. Billets, slabs and sheet bars are quotable at $26, Pittsburgh, Youngstown or Cleveland; forging billets at $31, Pittsburgh, and wire rods at $35, Pittsburgh or Cleveland.

Bars, Plates and Shapes

The 1.60c., Pittsburgh, price on soft steel bars, structural plates and shapes has been established for fourth quarter delivery. Extras for size, quantity and analysis have also been established, as covered in THE IRON AGE of Sept. 7. Steel sheet piling has been reaffirmed for fourth quarter at 1.90c., Pittsburgh.

Early prospects for structural steel are slightly improved by several fairly important jobs to be bid this month. The long view, however, continues to be obscured by the characteristic deliberation of Government authorities in releasing further appropriations. Many Federal projects, moreover, are slow to reach the letting stage because of restrictive labor clauses and other stipulations imposed on bidders for all Government construction work. Structural awards in the past week were relatively small, and fresh inquiry unimportant. Tonnage requirements for ramps at the Pittsburgh post office are being figured and are expected to be fairly large. Plates are extremely dull. Projected tank work is negligible, and barge construction still is restricted to previous commitments. Railroad needs are spotty. The belief that plate demand from the carriers will expand sharply within the next few months is becoming more definite as Federal financial aid for railroad replacement buying nears realization. Reinforcing bars still await the impetus of Government work. About 150 tons of bars is estimated to be needed for the Pittsburgh post office ramps.

Rails and Track Accessories

Distribution of orders for 31,500 tons of rails by the Chesapeake & Ohio failed to provide the local rail mill with much tonnage. The major share of the tonnage will be rolled by Chicago mills. Very little demand for rails or accessories is in evidence at the moment. The long-awaited replacement programs, however, are apparently nearing crystallization, and, with Government financing practically assured, the carriers are expected soon to enter the equipment market. To what extent the prospective purchases will affect demand for steel can only be conjectured, but its impulse, at any rate, will be decidedly sharp because of the protracted absence of railroad buying in the past two years.

Light billet rails have been advanced to $34 a ton. Rails made from old rails, rail seconds, rail crops or off-heat and discard steel have been marked up to $32. These prices were filed under the steel code. Official announcement of code prices for steel tie plates, track spikes and track bolts is lacking, but current quotations are expected to be reaffirmed.

Wire Products

No changes have been made under the code in base quotations on manufacturers' wire and wire nails. Quotations are rigidly adhered to, with bright wire posted at 2.10c., Pittsburgh and Cleveland, and standard wire nails at $2.10, base per keg. Demand for wire products is generally light, although orders for wire nails are not infrequent.

Sheets

Producers have reestablished current quotations on sheets for fourth quarter, with the exception of hot-rolled, No. 10 gage, and hot-rolled annealed, No. 10 gage, which have been advanced $2 a ton to 1.75c. and 1.90c., respectively, Pittsburgh. Specifications from the automotive industry are holding up very well, but demand from miscellaneous users has fallen off. New business is hampered somewhat

by indefinite interpretations of code sheet extras. Some revisions in the initial schedule of extras will probably be made before the set-up will be considered uniformly acceptable. Sheet mill operations in this district continue to show surprising staying powers. The unchanged rate of 55 per cent, however, is sustained to some extent by heavy rolling schedules at mills engaged on the recent large export order for galvanized sheets for the Argentine.

Tubular Goods

A slight pick-up in demand for seamless boiler tubes is evident, while other tubular goods are quiet. Standard pipe is particularly dull and reflects the well-bought position of jobbers who covered freely prior to the advance in prices on July 1. Tentative line projects continue to hover over the market, but are too indefinite to arouse interest. Federal restrictions covering drilling in the oil fields are beginning to carry their full impact to the market for oil country goods, which are now virtually dormant.

Cold-Finished Bars

Although the 1.95c., Pittsburgh, price is in effect only for the remainder of the third quarter, no change from the present schedule is expected for the final quarter. Automobile and parts makers continue to limit their specifications, although demand from these sources is expected to expand shortly when engagement on new models spreads. Miscellaneous demand is considered satisfactory, but bookings lack important tonnage. Quotations on ground shafting filed under the code reflect no changes from present schedules.

Tin Plate

With specifications restricted to contracts entered at $4.25, the recent advance to $4.65 has thus far lacked the test of new business. Some confusion exists as to the proposed 7½ per cent discount to large buyers. Other details concerning extras remain to be clarified, and definite announcement of completed schedules is not expected before the end of this week. Specifications against old contracts continue to pour in in undiminished volume, and tin plate mills continue to operate at virtual capacity. Specifications already placed are considered sufficient to carry the present rate through October, and in one or two cases will necessitate full engagement almost through the year.

Strip Steel

Hot-rolled strip has been advanced $2 a ton to 1.75c., and cold-rolled $3 a ton to 2.40c., Pittsburgh, for fourth quarter. The advances have not thus far prompted much buying, although inquiry from the automotive industry is improved. Specifications for delivery in September must be filed before the last day of the month in order to be billed at the current quotations of 1.65c. on hot-rolled and 2.25c. on cold-rolled. Consumers, however, are somewhat cautious about specifying, but some expansion in orders is expected before the close of the month.

Coke and Coal

In the virtual absence of demand, fuel prices continue nominal. Connellsville furnace coke is plentiful at $2.50, ovens, although several sellers are holding at $2.75. Standard foundry coke is untested at $3.25, while premium brands of foundry coke are posted at $4.50, Connellsville, with very little tonnage being absorbed. Bituminous coal prices are unchanged. Quotations reflect strength, however, with higher levels practically certain to result when the prospective coal code is completed.

Scrap

Continued aloofness of mills has caused further softening in scrap prices. Dealers with short orders are able to cover freely on No. 1 heavy melting steel at $12.50 to $12.75. In the absence of mill purchases, the asking price on that grade is nominally unchanged at $13.50. The range between buying and asking prices has therefore widened to $12.50 to $13.50. No. 2 railroad wrought and scrap rails are sympathetically lower, as is No. 2 heavy melting steel. Blast furnace grades are also lower at $9 to $9.50. Heavy breakable cast is up 25c. a ton, owing to an improved demand resulting from recent advances in pig iron. No. 1 steel on the recent Pennsylvania Railroad list brought slightly less than $13 a ton for delivery to a nearby consuming point. The Baltimore & Ohio list, which was closed yesterday, included about 9000 tons, of which 1800 tons is No. 1 heavy melting and 5000 tons is No. 1 steel rail scrap. The Baltimore & Ohio scrap, however, is not expected to come into this district.

Blast Furnace Stocks of Iron Grow in South

BIRMINGHAM, Sept. 12.—Pig iron sales and shipments are dragging. Little interest has been shown by melters in fourth quarter tonnage and the amount booked so far is small. Some sellers fear that buying will go back to a desultory basis unless some fresh stimulation is provided. September shipments have followed the downward trend of August, with the result that furnace stocks are growing appreciably. It is not unlikely that one, and probably two, furnaces will be banked by the end of the month if the outlook does not improve. Quotations for September and the last quarter are firm on a base of $13.50. The number of active furnaces is unchanged at eight, with three on basic iron and five on foundry. Last week Republic Steel changed its No. 1 furnace from foundry to basic.

A lull has developed in scrap buying. Steel mills and some of the foundries are well stocked and have stopped shipments on contracts. Dealer receipts have been heavy of late and all yards have large stocks on hand. Several downward revisions have been made in prices.

Steel

Steel buying is now made up mostly of small orders for light products, just as it has been for several weeks. Current business is far below current production, which has been maintained largely by backlogs. These are now being exhausted. There is no particular activity in any line. The first downward turn in open-hearth production for general business came last week, when 11 open-hearth units were worked instead of 13, as for months previous. The same number is scheduled for this week. Open-hearth activity reached its highest points during the summer when 18 to 19 furnaces were operating, but five of these were for the Ensley rail mill and were taken off when that mill closed down.

Empire Steel Plants Ordered Sold by Court

THE Empire Steel Corpn., Mansfield, Ohio, with plants at Mansfield, Cleveland, Ashtabula and Niles, Ohio, was ordered sold to the highest bidder by Federal Judge Samuel H. West in Cleveland, Sept. 9. No date was set for taking bids, although the court order stipulated that the properties should be sold within 40 days.

The reorganization committee headed by Frank A. Scott, with a membership including members from committees representing bondholders, creditors and other interests, expects to have its plans complete for court approval shortly. The committee then proposes to form a new corporation and bid in the plants. About 78 per cent of the bondholders and 81 per cent of the general creditors have turned their claims over to the committee.

Secured claims against the company total $3,220,000 and general claims approximately $2,100,000. The court stipulated that the minimum offers to be accepted for the plants are: Cleveland plant, $147,000; Mansfield plant, $600,000; Falcon plant, $285,000; Niles plant, $90,000; Waddell plant, $40,000, these three plants being located in Niles, and Ashtabula plant, $110,000.

The Mansfield plant will continue to be operated under C. H. Henkel, the receiver, until the sale is approved.

Western Buyers Oppose All-Rail Freight Charges Under Code

Fight for Freight Advantages Holds Back Steel Buying—Chicago Output Falls to 41 Per Cent of Capacity

CHICAGO, Sept. 12.—Notwithstanding that the time is at hand when some lines of steel demand should be growing, there is still a downward trend in shipments. Sales, though moderately better than a week ago, are far from the mark which would indicate a true fall pickup. Rails for the Chesapeake & Ohio and the New York Central have materially helped steel mill books in this district. Some increase in miscellaneous steel demand is encouraging, but in other directions consumption is lower.

Federal aid projects are slow in maturing, though it now seems probable that mills will receive some sizable orders near the end of the month.

Freight rates, as they apply to delivered prices, are causing much discussion. For instance, jobbers in the Northwest have been accustomed to use a water-and-rail rate. They are fighting to maintain this advantage. There is also the truck problem, as well as combinations of two or more of the various modes of transportation. Most sellers believe that the difficulty over freight charges is holding back much major fourth quarter tonnage that should by this time be on their books.

Many estimates of needed rails are being made but actual inquiries are lacking. The railroads are also talking about bridge work, but no dates have been set for taking figures except on very small tonnages. Recent serious railroad accidents, as well as shippers' experiences with bad order cars, are leading the public into open interest and discussion of the railroads' needs in the way of necessary expenditures.

Pig Iron

Fourth quarter sales of Northern foundry iron are slowly gaining in volume. Specifications are also gaining, but they give no indication of the actual melt for the reason that an appreciable tonnage is being taken out on old contracts that were closed at the lower prices which prevailed before codes were signed.

Cast Iron Pipe

Demand for cast iron pipe is virtually at a standstill. Sellers have been following projects for which Government funds are being sought but so far little money has been made available. Wilmette, Ill., is seeking aid for enlargement of its water mains. Two sizable projects are still hanging fire at Milwaukee, having developed only to the point of announcing low bidders on general contracts.

Warehouse Business

The early days of September show demand about equal to the average in August. October is usually one of the three big months in warehouse activity and present indications are that it will be no exception this year.

Reinforcing Bars

Road work is again moving fast in Indiana, Iowa and Wisconsin, but activity is lagging in Illinois and it is reported that pressure is to be applied to force it to make use of Federal aid funds before cold weather sets in. Wisconsin and Indiana each will take bids this month on 1000 tons of bars, and 600 tons will be required for two dams on the Mississippi River in Wisconsin. Private work is confined to 200 tons for a distillery at Peoria, Ill., and a fair sprinkling of small tonnage jobs. Output of bending shops is slowly dropping to lower levels.

Cold-Rolled Strips

Prices for this commodity vary from 2.25c. to 2.40c. a lb., Cleveland. Some sellers are holding to the lower figure until Sept. 16, when books will be opened for the fourth quarter at the higher quotation. Others are now asking 2.40c. on all business taken for the remainder of the year, though old commitments are not being disturbed if they apply to the month of September. Specifications are up moderately from miscellaneous sources, this gain being more than sufficient to offset the drop in releases from automobile centers.

Hot-Rolled Strip

Hot-rolled strips are being advanced $2 a ton for fourth quarter delivery. Some sellers now have this price in effect while others will put it into effect Sept. 16. Business is moderately improved especially for barrel manufacturers.

Wire Products

Output still holds at 50 per cent of capacity, but shipments are several points under this figure. Inquiry for fourth quarter is dragging, most major requests for prices being held back pending clarification of methods of figuring delivered prices on the basis of rail, water and truck combinations. The result is that very little fourth quarter business has been added to books. Reports from farm areas are mixed, though it begins to be apparent that on the average agricultural sentiment is improved.

Sheets

Prices for No. 10 hot-rolled sheets have been advanced to 1.85c., Gary, for fourth quarter. Output is being sustained at a 60 per cent rate by old orders. Fresh inquiries and new orders are light.

Rails and Track Supplies

The Chesapeake & Ohio, which last week placed orders for 31,480 tons of rails, is now in the market for about 10,000 tons of track accessories.

Bars

New business is sluggish, but specifications hold fairly steady. Automobile plants are using smaller tonnages and, though some of them are preparing to order steel for new models, others will not get under way for over a month. The gain in demand from agricultural implement plants is slow but steady. Sellers of iron bars are announcing fourth quarter prices at 1.60c. a lb., Chicago.

Plates

Orders remain light and mixed in character. The Western Fruit Express has ordered 100 underframes. A Chicago tank maker has taken 800 tons of plates for tanks for the Walker distillery at Peoria, Ill. A dam job at Chama, N.M., will require 1300 tons of plates.

Structural Material

Both inquiries and awards are very light. Fabricators are concerned because of the slowness with which Government-aid projects are coming out for figures. Railroads have plans for bridge work, but nothing definite can be said as to the time bids will be taken. The American Bridge plant at Gary has started to fabricate its share of the San Francisco bridge.

Scrap

This market remains dull and prices are leaning toward the weak side. No major transactions have been closed and so far as can be seen now none are in the making. Dock accumulations are moving slowly. A boat load of heavy melting steel is owed from Chicago to a Lake Erie point and another cargo is due to move from Duluth to the east. Production of cast iron borings has outrun consumption and they are now going to a dock for movement by boat. Railroad offerings are large. This tonnage, combined with that derived from car wrecking operations which were not scaled down fast enough to meet the recession in ingot output, is accounting for the difficulty dealers are having in placing cars that are arriving on track.

Mills Eat Into Backlogs in Eastern Pennsylvania

New Business Continues to Recede and Ingot Output Eases Off Another Point to 37 Per Cent of Capacity—Scrap Softens

PHILADELPHIA, Sept. 12.—Business shows a further slight recession. On the whole, however, it is holding up fairly well when compared with August. Consumption has fallen below the June and July rate.

Confusion over prices continues to exist pending adjustments of the code. Some mills are not quoting for the fourth quarter, except on a limited number of products, and this is retarding new business. Operations are eating into backlog business and unless the situation is cleared up soon producers will enter the fourth quarter with considerably lighter commitments. There has been another drop of one point in open-hearth output to 37 per cent of capacity.

Present indications are that there will be few changes in base prices for fourth quarter shipment. There have been three increases, however, in fourth quarter quotations on flat rolled products. Hot-rolled strip steel and hot-rolled No. 10 sheets have been moved up $2 a ton to 1.75c., Pittsburgh, and cold-rolled strip steel has been advanced $3 to 2.40c. Some makers also have opened their books for the fourth quarter at unchanged prices on merchant steel bars, plates and shapes. Bookings of tin plate are heavy and are almost sufficient to carry mills over the remainder of the year at their present high rate of operations.

It is reported that when surcharge freight rates are eliminated on Sept. 30, the railroads will seek to increase less-than-carload rates to a point above those now in effect, including surcharges.

Pig Iron

While involving only small tonnages, inquiries for foundry grades have picked up slightly. Shipments have tapered off. Fourth quarter bookings, when aggregated, reach a fair volume and have been taken at prices recently announced.

Plates, Shapes and Bars

Some makers have opened their books for the fourth quarter at unchanged prices, with plates at 1.70c., Coatesville; shapes at 1.70c., Bethlehem, and steel bars at 1.60c., Pittsburgh. Others continue to withhold quotations for the last quarter, although the code prices on these products have been virtually straightened out and all mills are expected to be soliciting fourth quarter business soon at prevailing levels. Demand is light. The Shoemaker Bridge Co. has been awarded a contract, involving 650 tons, for mail platforms for the Pennsylvania Railroad's Thirtieth Street Station in Philadelphia.

Sheets

Specifications have picked up now that fourth quarter prices have been announced. Three changes have been made in prices for the last quarter. Hot-rolled strip steel and hot-rolled No. 10 sheets have been advanced $2 per ton from 1.65c. to 1.75c., Pittsburgh, while cold-rolled strip has been increased $3 per ton from 2.25c. to 2.40c., Pittsburgh. Buyers have shown interest in getting in specifications, which are to be in by Sept. 15 for shipment by Oct. 1, before the higher levels go into effect. Automotive buyers have specified against most contracts and some have placed business for the fourth quarter. No. 20 cold-rolled sheets remain unchanged at 2.75c., Pittsburgh, for the last quarter. This price applies to the automotive trade as well as to other consumers.

Warehouse Business

The market is quiet and prices unchanged.

Imports

The following iron and steel imports were received here last week: 3193 tons of pig iron from British India, 300 tons of ferromanganese and 46 tons of steel bands from Germany, 102 tons of sponge iron and 2 tons of steel tubes from Sweden, and 167 tons of structural shapes, 91 tons of steel bars and 29 tons of steel bands from Belgium.

Scrap

Mills continue to buy sparingly and the market for No. 1 heavy melting steel has softened to a range of $11 to $11.50. An offer at the former price has just been made by melters, but dealers generally still are reluctant to sell. Last week 2000 tons of No. 1 heavy melting steel is reported to have been bought at $10.50 for delivery at Bethlehem, while a similar tonnage is said to have been taken at $10 for shipment to Sparrows Point.

Demand Subsides at Cincinnati

CINCINNATI, Sept. 12.—Pig iron demand has declined. Most melters are well covered and have withdrawn from the market to await further developments. Bookings of the week, totaling about 600 tons, disclosed definite firmness of quotations and consumer disposition to accept the new schedules. Inquiry is still limited to spot carload needs. Shipments against existing contracts are nearly completed, although tonnage remaining on furnace books is being ordered out slowly. Foundry operations have eased slightly in view of the uncertainty of automotive requirements for new models. Machine tool foundries are still without appreciable business, although prospects appear brighter each week.

Coke

Shipments of by-product foundry coke have subsided since Sept. 1, probably as a reaction to the stimulus provided during August by announcement of price advances in September.

Steel

Restriction of automotive demand in anticipation of model changes has reduced steel bookings to about 60 per cent of mill capacity. Business from refrigerator plants has subsided in response to the usual seasonal recession. Improvement in road construction activity is looked for.

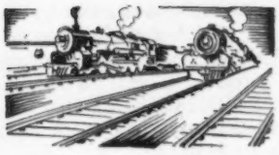
Scrap

Absence of demand for scrap is contributing a weak undertone to quotations, although no changes have been made. Pressure on prices has spread to small-lot offerings.

Scrap Steel Declining at Detroit

DETROIT, Sept. 12.—With consumers still refraining from making further purchases until the confusion surrounding application of the steel code is ended, the local scrap market remains quiet. Most steel grades and some cast iron items have slipped off 25c. to 50c. a ton, and a few distress lots have brought still greater concessions. The local electric steel company is slowly building up a stock of scrap but is mainly confining its purchases to tonnages available at less than the current market.

Steel Bookings Lag in New York District



Expediting of Government-Aid Construction Projects Is a Favorable Feature — Fourth Quarter Advances on Strip and Alloy Steel Bars Announced

NEW YORK, Sept. 12.—Demand for finished steel continues to lag as compared with August and July. While confusion as to new prices and extras is disappearing as new schedules are being distributed by mills among their customers, there are no signs of any marked upturn in business in the near future. In the case of products which have been advanced for the fourth quarter there may be some increase in specifications this month, particularly against pre-Code third quarter contracts which, in the case of heavy rolled products, do not require the filing of shipping orders before Oct. 1.

The outlook in heavy products has been improved as the result of the expediting of certain large Government-aid projects. The State Department of Public Works will take bids Sept. 14 on 12,000 tons for the Grand Island bridges on the Niagara River. Tenders on the towers of the Tri-Borough bridge, New York City, 16,000 tons, will be received late this month. For the Midtown tunnel, New York, bids on 52,000 tons of cast iron segments will be opened Sept. 26, and for 2000 tons of bolts not later than Oct. 9. Figures on 1000 tons of structural steel for the shaft on the New York side of the tunnel are also likely to be taken in the near future. The distribution of the Chesapeake & Ohio rails, totaling 31,480 tons, was as follows: 2644 tons to Carnegie Steel Co., 13,505 tons to Illinois Steel Co., 10,672 tons to Inland Steel Co., and 4659 tons to Bethlehem Steel Co.

Sellers generally report that August orders passed to entry at the mills fell short of the total for July. In the case of one important sales office August bookings were equal to 70 per cent of those of July. In many instances fourth quarter prices are identical with those filed under the Code for the third quarter. Exceptions, outside of tin plate mentioned a week ago, are: hot-rolled strip, which has been advanced $3 a ton to 1.75c., Pittsburgh; cold-rolled strip, advanced $3 a ton to 2.40c., Pittsburgh or Cleveland; fender stock, advanced $3 a ton to 3.10c., Pittsburgh or Cleveland; and alloy steel bars, advanced $2 a ton to 2.25c., f.o.b. Bethlehem.

Pig Iron

Melters are confining fresh purchases to spot carlots as there is no incentive to contract for forward tonnages. Code provisions have eliminated the bargain buying which has stimulated market activity in the past. Bookings for the week aggregated 2300 tons as against 2200 tons last week and 2500 tons a fortnight ago. Melters have their current needs fairly well covered, but the general lack of fresh buying has resulted in somewhat depleted stock piles. Only negligible fourth quarter tonnage has been placed. A sizable potential demand for iron is building up, and local sellers anticipate considerable buying activity if casting schedules materially increase. New Jersey and Connecticut foundries have fully recovered from the August recession, and it is generally expected that September activity will exceed that of the preceding months. A general price rise before the end of the year is considered possible by several furnace representatives, although such action is totally dependent upon a supporting demand from consumers.

Reinforcing Steel

The local district continues to derive its only support from scattered bookings of road mesh. Kalman Steel Corpn. received a 600-ton road mesh award for New York highway constructed in Suffolk and Putman counties, and Carroll-McCreary Co., Inc., was low bidder on 350 tons of bars for United States Engineer's projects at Montpelier and Barre, Vt. Pending awards include over 700 tons of mesh to be let during the week by New York highway contractors. In addition, New Jersey is rapidly completing its highway plans, and sizable mesh tonnages will be placed during the next three weeks. Current quotations are established at 1.90c. a lb., Pittsburgh base, for cut lengths and 1.80c. for mill lengths.

Scrap

Local brokers are still unable to ship freely to Pittsburgh mills, and releases to that point are confined to scheduled contract tonnages. Buffalo and Eastern Pennsylvania mills are exhibiting no inclination to reenter the current market. The lack of domestic support would usually result in considerable price sagging, but at the present time a compensating demand has been afforded by the active export engagements of several brokers. Local operators estimate that over 15,000 tons of No. 2 heavy melting steel, together with a sizable tonnage of No. 1, will move to Italy from the Metropolitan district within the next two months. The present price structure is largely nominal, although the undertone is decidedly steady. No. 1 heavy melting steel received a fair test at $8 a ton, on the basis of a collection of sizable tonnages at Jersey points for a Chester, Pa., consumer. The general indisposition of buyers to make short commitments has led the local trade to expect considerable price hardness within the next three weeks. Strengthened quotations, however, will depend to a great extent on the reappearance of a firm domestic demand, although the heavy export movement should prevent drastic price weakness. Japanese melters entered the market last week to take a heavy shipment of scrap rails at $10.50 a ton, f.a.s. New York.

New England Foundry Coke Prices Up 50c. a Ton

BOSTON, Sept. 12.—Effective Friday, Sept. 15, the New England Coal & Coke Co. and the Providence Gas Co. will advance prices on by-product foundry coke 50c. a ton, making the delivered price at most New England points $10.50 a ton. The price of $10 a ton, delivered, was established April 20, 1932.

Pig iron sales have been rather limited, but deliveries on old contracts are quite heavy. Furnaces have opened their books for fourth quarter business, and have received a few inquiries, mostly for car lots. Most of the largest melters bought enough iron for third quarter delivery to carry them well into or through the fourth quarter, and as the increase in the New England weekly melt under the NRA has been disappointingly slow, no great amount of pig iron activity is anticipated during the remainder of 1933. The Port Henry furnace recently sold 1500 tons of basic to a Rhode Island melter, and is understood to have a backlog of about 30,000 tons. It is not active in this territory at the moment, however.

Reinforcing bars were advanced $4 a ton on Sept. 11. They are now 1.95c. a lb., cut to length, on cars Buffalo, or 2.21c. in carlots, delivered Boston.

Scrap prices are largely nominal, most dealers having no business to work on. One concern shipped two barges of scrap, 2400 tons, to Baltimore the past week, presumably for the Bethlehem Steel Co., on an old contract.

Steel Output Recedes Nine Points in Cleveland Area

Demand Slackens Except for Products on Which Fourth Quarter Advances Have Been Announced—C. & O. Inquires for Track Supplies

CLEVELAND, Sept. 12.—Orders against third quarter contracts for hot-rolled sheets and hot and cold-rolled strip are heavy and buyers are intent on getting in their specifications by Sept. 15, which is the deadline date. Much of this tonnage is coming from the automotive industry. Orders for other sheet products, including bars, plates and shapes which were not advanced when the new prices were filed under the code, are very light.

The slackening in the demand has resulted in a nine point decline to 45 per cent of ingot capacity in operations in the Cleveland-Lorain district. The Corrigan, McKinney Steel Co. and the Lorain plant each took off two open-hearth furnaces. Most sheet and strip finishing mills still have good backlogs and are maintaining operations. While some are doubtful of being able to keep up present schedules through the month, others have enough tonnage to carry them well into October. New business is still being retarded by confusion over new extras although this situation is gradually being cleared up.

Prices for the fourth quarter have been named on most products. The only changes are advances of $2 a ton on hot-rolled sheets and hot-rolled strip and $3 a ton on cold-rolled strip and fender stock. Steel bars remain at 1.65c., Cleveland, and plates and shapes at 1.60c., Pittsburgh. Wire products are reestablished at present prices and wire rods remain at $35. While some of the mills producing heavy rolled steel have announced the reaffirmation of present prices, they have not yet opened their books for the fourth quarter. Advances in strip and hot-rolled sheets are expected to stimulate orders for these products before the new prices become effective. Scrap prices have declined.

The Chesapeake & Ohio has placed its rail orders aggregating 31,480 tons, which were divided between four mills, and has sent out inquiries for its track accessories to go with these rails, including 8000 tons of bolts, spikes and tie plates and an unstated quantity of angle bars. A portion of these accessories have been placed.

Pig Iron

One producer during the week sold 2000 tons for the last quarter and received several new inquiries for the same delivery. Shipments are holding up to the August rate. Some of these are against orders taken at $2 a ton below present prices. Under the new price system requiring the filing of price changes ten days before they become effective, it is probable that should a producer decide to mark prices up it would withdraw from the market during the ten-day period.

Iron Ore

Shipments from Lake Erie docks during August were 2,812,093 tons, as compared with 516,315 tons during August last year. Shipments from these docks for the season until Sept. 1 were 6,072,070 tons as against 1,479,770 tons during the same period last year. Shipments to other than Lake Erie ports in August were 1,132,461 tons as against 87,508 tons in August, 1932, and for the season until Sept. 1, 2,372,016 tons as compared with 376,056 tons during the same period last year. The dock balance Sept. 1 was 4,895,524 tons, as against 5,267,689 tons on Sept. 1 last year.

Bars, Plates and Shapes

Specifications against contracts and new business are light. Little activity is developing in the building field. Bids for two lighthouse tenders for the Great Lakes, requiring 650 tons of plates, will be taken in Washington Sept. 20.

Bolts and Nuts

Present discounts are expected to be reaffirmed shortly for the fourth quarter, now that the prices of steel used in making these products have been reaffirmed for that delivery. A change in elevator bolts and step bolts has been made in the new schedule. These heretofore have carried the same discount as machine and carriage bolts but are now 70 per cent off list, a price advance of three points.

Reinforcing Bars

Cleveland distributors are quoting new billet steel reinforcing bars at 1.95c. for cut lengths, or $2 a ton above the base price. For local delivery a switching charge will be added to mill orders, the same as on merchant bars, whether the bars are shipped by local or outside mill. Rail steel bars now have a Cleveland basing point, with distributors quoting 1.80c. for reinforcing bars, while bars for manufacturers' use are quoted at 1.55c. Rail steel bars have new quantity extras of 15c. a 100 lb. for 5 to 15 tons, 25c. for 1 to 5 tons and 50c. for less than one ton.

Sheets

Several producers have named present prices for the fourth quarter except on hot-rolled sheets which are advanced $2 a ton to 1.75c., Pittsburgh, for No. 10. Specifications against contracts are heavy as consumers must get them in by Sept. 15.

Strip Steel

Price advances of $2 a ton on hot strip to 1.75c., Pittsburgh and $3 a ton to 2.40c., Cleveland and Pittsburgh, on cold-rolled strip have been announced by several producers. Fender stock has also been advanced $3 a ton to 3.10c. These prices are to apply to the last quarter. Specifications against contracts taken at lower prices than now prevailing are heavy.

Rails and Track Supplies

The Chesapeake & Ohio Railroad, following the placing of 31,480 tons of rails, sent out inquiries for its track accessories amounting to over 8000 tons, not including angle bars. The inquiry called for 3100 kegs of track bolts, 7880 kegs of track spikes, and 953,000 or approximately 7000 tons of tie plates. Orders for these accessories are now being placed. The company's rail order was distributed as follows: Illinois Steel Co., 13,505 tons, Carnegie Steel Co., 2644 tons, Inland Steel Co., 10,672 tons, and Bethlehem Steel Co., 4659 tons.

Scrap

With the almost total absence of any new demand prices have weakened 50c. a ton on steel-making scrap and 25c. a ton on blast furnace grades. Mills in the Cleveland and Youngstown districts have good stocks and are taking little or no scrap.

Method of Quoting Steel Changed on Coast

SAN FRANCISCO, Sept. 11.—Under new practices prescribed by the steel code mill quotations on steel have been changed from c.i.f. to f.o.b. dock, Pacific Coast ports. Base prices per lb. have been raised 5c. a 100 lb. to cover the added service. Warehouse schedules will be changed shortly.

New inquiries have been limited to highway work calling for 738 tons of structural steel and 743 tons of reinforcing bars.

Awards totaled but 932 tons of structural steel and 751 tons of reinforcing steel. The cast iron pipe market reported no activity during the week. The only sizable letting was 2700 tons of black sheets placed with the Columbia Steel Co.

Fabricated Structural Steel

Awards 8165 Tons—New Projects Total 24,560 Tons

STRUCTURAL steel awards are again small, totaling only 8165 tons, as compared with 9287 tons a week ago. New projects, on the other hand, are in good volume, aggregating 24,560 tons, compared with 27,332 tons last week. Conspicuous in the new work reported are the towers for the Tri-Borough Bridge, New York, 16,000 tons, on which bids will be taken late this month. Fabricated plate awards are light, totaling 2620 tons. Structural steel lettings for the week follow:

NORTH ATLANTIC STATES

Williamstown, Mass., 510 tons, highway bridge to American Bridge Co.

Brooklyn, N. Y., 175 tons, Brighton Laundry building addition, to Nassau Iron Works.

Orange and Monroe Counties, N. Y., 520 tons, bridges, to Lackawanna Steel Construction Corpn.

Elmira, N. Y., 230 tons, Erie Railroad Co., bridge, to American Bridge Co.

Albany, N. Y., 200 tons, warehouse for Grange League Federation, to R. S. McMannus Steel Construction Co., Buffalo.

Colden, N. Y., 100 tons, Erie County bridge, to McClintic-Marshall Corpn.

Lackawanna, N. Y., 210 tons, two State highway bridges, to McClintic-Marshall Corpn.

Philadelphia, 650 tons, mail platform for Pennsylvania railroad's Thirtieth Street Station in Philadelphia, to Shoemaker Bridge Co.

Wilmington, Del., 190 tons, highway bridge over St. James Creek, to Virginia Bridge & Iron Co.

Washington, D. C., 1525 tons, lookout towers for United States Department of Agriculture: 1200 tons to International-Stacey Corpn., and 325 tons to Airmotor Co.

Pittsburgh, 465 tons, repairs to Pittsburgh & West Virginia Railway bridge, to American Bridge Co.: previously reported to Fort Pitt Bridge Works Co.

THE SOUTH

Baltimore, 206 tons, plants for Maryland Distillery Co., to Deitrich Bros.

Covington Ky., 195 tons, Heidelberg Brewing Co., building, to Lang Iron Works, Cincinnati.

Miami, Fla., 190 tons, City Ice & Fuel Co., brewery building, to Ingalls Iron Works.

CENTRAL STATES

Chicago, 130 tons, grain elevator, to Mississippi Valley Structural Steel Co.

Chicago, 365 tons, Santa Fe Railroad Co., subway, to Hanson-Elcock Foundry Co.

Robertson, Mo., 110 tons, Wabash Railroad Co., bridge span, to Stupp Brothers Bridge & Iron Co.

Des Moines and Lee Counties, Iowa, 340 tons, bridges, to Clinton Bridge Co.

Lee, Iowa, 370 tons, bridge, to Pittsburgh-Des Moines Steel Co.

Norfolk, Nebr., 350 tons, bridge to Omaha Steel Company.

State of Nebraska, 185 tons, bridge spans, to Omaha Steel Co.

WESTERN STATES

San Francisco, 365 tons, miscellaneous steel for United States Navy, to Pacific Coast Steel Co.

Los Angeles County, Cal., 140 tons, viaduct at La Tijera Blvd., to Columbia Steel Co.

Trona, Cal., 175 tons, American Potash & Chemical plant, to Virginia Bridge & Iron Co.

Pasadena, Cal., 100 tons, Huntington art gallery, to Pacific Iron & Steel Co.

Tacoma, Wash., 150 tons, material for Weyerhaeuser Timber Co., to Pacific Car & Foundry Co.

Marshfield, Ore., 100 tons, post office, to unnamed bidder.

Larimer County, Colo., 184 tons, two state highway bridges, to unnamed bidder.

Flagstaff, Arizona, 200 tons, bridge to Kansas City Structural Steel Co.

NEW STRUCTURAL STEEL PROJECTS

NORTH ATLANTIC STATES

State of New York, 500 tons, highway bridges.

New York, 16,000 tons, towers for Tri-Borough bridge; bids to be taken late this month.

Wilmington, Del., 1000 tons, high school.

Richmond, Va., 700 tons, Marshall Street viaduct. Wisconsin Bridge & Iron Co. low bidder.

CENTRAL STATES

Chicago, 200 tons, sanitary district sewage plant.

New London, Wis., 350 tons, grade separation; bids close Sept. 19.

State of Oklahoma, 1300 tons, highway bridges.

State of Missouri, 900 tons highway bridges.

Tenbrook, Mo., 900 tons, Merrimac River State highway bridge.

WESTERN STATES

San Bernardino County, Cal., 660 tons, state viaduct, bids Sept. 27.

Chama, New Mexico, 1300 tons, dam across Chama River.

Globe, Ariz., 275 tons, bridge.

State of Nebraska, 275 tons, highway bridge.

State of Colorado, 200 tons, 3 highway bridges.

FABRICATED PLATE

AWARDS

Chelsea, Mass., 1020 tons, six tanks for Mexican Petroleum Corpn., to Chicago Bridge & Iron Works.

New Orleans, 800 tons, four barges for Lester F. Alexander Co., to Ingalls Iron Works.

Peoria, Ill., 800 tons, tanks for Hiram Walker & Sons, to Graver Tank & Mfg. Corpn., Chicago.

NEW PROJECTS

Washington, D. C., 650 tons, two government lighthouse tenders for Great Lakes. Bids taken Sept. 26.

Reinforcing Steel

Awards 2413 Tons—
New Projects 5543 Tons

Montpelier and Barre, Vt., 350 tons bars, for dam construction work by United States Engineers; Carroll-McCreary Co., Inc., low bidders.

Williamstown, Mass., 190 tons, state road and bridge to Kalman Steel Co.

State of New York, 600 tons, mesh, for highway construction in Suffolk and Putnam counties, to Kalman Steel Corpn.

State of Wisconsin, 270 tons, highway work to Concrete Steel Co.

State of Wisconsin, 100 tons, highway work to Concrete Engineering Co.

Peoria, Ill., 200 tons, Hiram Walker & Son, distillery, to Kalman Steel Co.

Los Angeles County, Cal., 151 tons, conduit under Venice Blvd., to Pacific Coast Steel Corpn.

Redwood City, Cal., 160 tons, Montgomery-Ward building, to Soule Steel Co.

San Diego County, Cal., 110 tons, state highway paving, to unnamed bidder.

State of Oregon, 167 tons, highway bridges in three counties, to various bidders.

State of Washington, 115 tons, paving in six counties, to various bidders.

NEW REINFORCING BAR PROJECTS

Brookline-Newton, Mass., 200 tons, bridge and roadwork.

State of New York, 700 tons, miscellaneous highway construction; awards will be announced during the week.

State of New Jersey, 800 tons, miscellaneous mesh and bar requirements for highway construction: lettings within the next three weeks.

Pittsburgh, 150 tons, ramps for Postoffice.

Alma, Wis., 300 tons, dam across the Mississippi River.

Fountain City, Wis., 286 tons, dam across the Mississippi River.

State of Wisconsin, 1000 tons, paving and bridges.

Milwaukee, 100 tons, government caisson plant; bids Sept. 13.

State of Indiana, 1000 tons, roadwork. Bids to be opened Sept. 19.

State of Illinois, 200 tons, state roadwork.

State of Illinois, 200 tons, bridge and roadwork in various counties.

Los Angeles County, Cal., 145 tons, bridge over Eaton Wash, bids under advisement.

San Bernardino County, Cal., 200 tons, State viaduct, bids Sept. 27.

Apache and Navajo Counties, Ariz., 119 tons, Bureau Public Roads bridges, bids Sept. 26.

Lewis County, Wash., 143 tons, Bureau Public Roads bridge over Cortright Creek, bids Sept. 20.

Cast Iron Pipe

Fort Smith, Ark., plans 24-in. main trunk line, 10½ miles, for water supply system. Financing being arranged. W. R. Holway, Tulsa, Okla., is consulting engineer.

Boise, Idaho, plans installation of new pipe lines for water supply system, replacing present wood pipe. Estimated cost $150,000. Financing being arranged.

Seymour, Wis. plans pipe lines for water distribution. Cost about $90,000 with waterworks station. A. E. McMahon Engineering Co., Menasha, Wis., is consulting engineer.

Phoenix, Ariz., plans installation of pipe lines for water supply outside city limits. Cost about $150,000.

McArthur, Ohio, plans installation of about 5 miles 4- to 8-in. pipe for water distribution system. Cost about $60,000 with pumping station and elevated tank and tower. Burgess & Niple, 568 East Broad Street, Columbus, Ohio, consulting engineers.

Steel Output Higher At Buffalo

BUFFALO, Sept. 12.—District steel output is slightly improved. The Seneca sheet division of the Bethlehem Steel Corpn. is operating at 70 per cent. The Lackawanna plant of Bethlehem now has eight open-hearths active, while the Republic Steel Corpn. is rebuilding an open-hearth and is at present operating six. The Wickwire-Spencer Corpn. continues to operate two.

Bids will be taken Sept. 14 for 1600 tons of reinforcing bars for the new bridges over the Niagara River to Grand Island. Buffalo structural fabricators have taken an Erie County bridge, 100 tons; a State bridge at Rochester, 250 tons; a State bridge at Dover, N. H., 1800 tons; a warehouse for the Grange League Federation at Albany, 200 tons. Quite a volume of small tonnage is being let and is out for bids.

Pig Iron

The pig iron market is quiet, with few sizable inquiries being made. However, as a result of solicitation, producers have closed some fair tonnage, in amounts running from carload lots to 500 tons. Shipments are going out steadily.

Scrap

The market is weak and may be sentimentally off about 25c. a ton, but there is no new buying to peg changes in price. Dealers are getting caught up on their old orders. Some orders of machine shop turnings have been taken at $8.50 to $9, delivered Niagara frontier points, and some short shoveling turnings have sold at $9 to $9.50 along the frontier.

Improvement in Machine Tool Orders Maintained

THE sharp improvement in machine tool business in July was maintained in August, according to the preliminary report of the National Machine Tool Builders' Association. New orders last month were at an index rating of 54.4, as against 53.9 in July. Shipments were 34.9, as compared with 35.6 the previous month, and unfilled orders were 58.1 as against 58.5 in July.

Pipe Lines

Northern Natural Gas Co., Owatonna, Minn., let contract to Fredell Construction Co., Denver, Colo., for construction of new 18-in. welded steel pipe line from Owatonna to Faribault, Minn., about 14½ miles, for natural gas service.

Consolidated Steel Corpn., Los Angeles, has secured contract from Pasadena, Cal., for construction of all-steel pipe line from Pine Canyon Dam, San Gabriel Canyon, to Sunset Reservoir, Pasadena, 18½ miles, for water supply system, at $654,972.69.

Stonewall Gas Co., Ada, Okla., recently organized by Samuel Miller, Ada, and associates, plans construction of welded steel pipe line from Fitts natural gas field, Pontotoc County, Okla. to Ada and vicinity, about 14 miles. Southwest Gas & Utilities Co., Ada, will carry out local distribution and arrange pipe line facilities.

Metropolitan Utilities, Harney and Eighteenth Streets, Omaha, Neb., plans installation of steel pipe lines for extensions in gas distributing system, and will arrange fund of $111,000 for work. C. D. Robertson is operating engineer.

Big Rapids, Mich., plans installation of steel pipe lines for municipal natural gas distributing system. Will also install distributing plant.

Indiana Gas Service Corpn., 617 Chamber of Commerce Building, Indianapolis, has made application for permission to install steel pipe line system for natural gas service. Main trunk line is proposed to natural gas fields in southern part of State for supply.

Pig Iron Quiet, Scrap Weaker at St. Louis

ST. LOUIS, Sept. 12.—The pig iron market is quiet, with scattering small-lot sales for prompt shipment. Deliveries continue heavy and melt is holding up well. Labor trouble at stove plants has been settled and operations resumed. Small melters who failed to cover at lower prices are now taking iron as needed.

In structural steel small jobs predominate with the aggregate fair. Warehouse business is holding at about August rate.

The scrap market is marking time. There are no price changes, but the tone of the market is easier and material is more easily obtained.

Progress in Sintering Flue Dust

SINTERING flue dust was touched on at some length in a comprehensive paper which William A. Haven, Arthur G. McKee & Co., Cleveland, presented to the recent meeting of the (British) Iron and Steel Institute, covering "Recent Developments in American Blast-furnace Design and Practice." Many mechanical improvements in the case of both the Dwight-Lloyd and the Greenawalt designs of plant have greatly extended the capacity of the units, he pointed out, reducing operating costs, improving the grade of the sinter and eliminating much of the dust nuisance. Ten years ago the average conversion costs, he said, exclusive of royalties and capital charges, were, for a large group of plants, $1.65 a ton of sinter, whereas, in modern plants these costs have been reduced to $0.65 a ton.

He directed attention to the study being made regarding the benefits that might attend the screening out of the very fine portions of Mesabi ore, say those passing through ¼-in. screens, and sintering them. "Where the ores contain a high moisture content (15 per cent or more), it may be shown to be economically desirable to sinter such ores at the mines, the saving in freight charges alone being sometimes equal to the cost of sintering." When it is thoroughly established that the sintering of the fine ores will bring about a total reduction in the total cost of the pig iron, an output from single stacks of 1500 tons a day may be expected, he added, because of the removal of the present greatest handicap to a higher rate of blowing than now obtains.

New Trade Publications

Cast Iron Pipe and Fittings.—Central Foundry Co., 420 Lexington Avenue, New York. Booklet of 56 pages featuring universal and Dual-Lok joint cast iron pipe and fittings. Pipe sizes range from 2 to 30 in.

Materials Handling Equipment.—Link-Belt Co., Chicago. Attractive souvenir booklet of Link-Belt exhibit at the Century of Progress Exposition, illustrating a large number of applications of the company's material handling and power transmission equipment.

Wire Rope.—Macwhyte Co., Kenosha, Wis. Circular devoted to features of the company's preformed wire rope, including balance, flexibility and other characteristics.

Stock List.—Joseph T. Ryerson & Son, Inc., Chicago. Book of 232 pages listing shapes, plates, bars, sheets, flat wire, tool steel and other iron and steel products stocked by the company. Stainless steels, brass, copper and other non-ferrous metals, and welding wire and rod are also listed. Tables of extras are included.

Opacimeter.—Bausch & Lomb Optical Co., Rochester, N. Y. Circular describing a new photoelectric instrument for determining the opacity of paper, either "contrast ratio" or "printing opacity."

Compressors.—Worthington Pump & Machinery Corpn., Harrison, N. J. Bulletin devoted to compressors for refrigeration, including an improved vertical, duplex, two-cylinder unit.

Interchangeable High Production Tools.—Eclipse Interchangeable Counterbore Co., Detroit. Illustrated catalog describing improved line of holders, cutters, pilots, plug setters, die sinking cutters and end mills, centers, counter-bore sets. Included is section devoted to special production tools with photographs showing industrial applications.

The State of California has awarded the general contract for 2700 tons of black sheets for its 1934 and 1935 license plate requirements. The State of Washington has awarded the general contract for 150 tons of cold-rolled annealed sheets for license plates for 1934.

Classes and Uses of Nickel-Steel Castings

A TABULATION of nickel-steel castings into eleven classes, giving the composition of each class and also the requirements of use to be met in each case, featured a paper contributed by Albert G. Zima, development and research department, International Nickel Co., Inc., New York, to the Chicago meeting of the American Foundrymen's Association.

Among the groups of castings were the following:

1. *Low-carbon and preheat nickel steel:* This type is especially recommended for locomotive frames, castings for mining, excavating and steel mill machinery, ship castings and other parts subjected to shock and fatigue stresses. The carbon is usually 0.20 per cent maximum and the nickel 2 per cent minimum with the manganese 0.60 to 0.90 per cent. Tensile strengths after prescribed heat treatment range from 75,000 to 85,000 lb. per sq. in. with an Izod impact value of 80 to 40 ft.-lb.

2. *Medium-carbon 2 per cent nickel steel:* This type is described as well adapted for miscellaneous railroad and ship castings, large gears not subjected to severe abrasion, steel mill machinery, crusher frames, tractor and power-shovel frames and so on. Composition ranges include: Carbon 0.20 to 0.30, nickel 2.00 to 2.25, manganese 0.80 to 1.00, silicon 0.25 to 0.40 and phosphorus and sulphur under .05 per cent. The average tensile strength is 90,000 to 105,000 lb. per sq. in.

3. *Pearlitic nickel-manganese steels:* These are pointed to as suitable for tractors, motor trucks, road-building machinery, electrical machinery and many highly stressed machine parts. The composition ranges from 0.20 to 0.40 carbon, 0.75 to 2.00 nickel and 1.00 to 1.50 per cent manganese. They are described as moderate in cost and often used to replace carbon and low-alloy steel castings when the improvements desired in static and dynamic properties do not warrant using higher alloy steels.

4. *Nickel-chromium steels:* The best balance for the general run of this type of steel castings is a nickel-chromium ratio of 2 or 2½ to 1. The type composition suggested is: Carbon 0.30 to 0.40, chromium 0.75 to 0.90 and nickel 1.30 to 1.50 per cent. These steels are used extensively for oil well tools, sheaves, sprockets, tractor shoes, gears, cams, etc., when normalized and drawn. Quenched in oil and tempered, these steels are used for hardened gears, abrasion resistant castings such as bucket teeth, small crusher jaws, conveyor chain links, etc.

5. *Nickel-vanadium steels:* These steels rarely contain more than 0.15 to 0.25 per cent vanadium with the nickel around 1.50 per cent and possess high strengths and elastic limit with good ductility. Grain refining effect is pronounced. Typical applications include medium and heavy locomotive and rolling mill machinery castings, highly stressed gears and parts of shovels and the like subjected to rugged service.

6. *Nickel-molybdenum and nickel-chromium-molybdenum steels:* These types are classed for high strength and high elastic properties combined with excellent ductility. They lend themselves readily to air quenching treatments.

Other types discussed include abrasion-resistant castings and austenitic nickel-manganese steel, as well as steel castings for elevated temperature service.

Welding Meeting Program Comprehensive

The thirteenth Fall meeting of the American Welding Society, to be held at the Book-Cadillac Hotel, Detroit, will include the following technical sessions:

OCT. 2, P. M.

Gas Cutting of Structural Steel, author to be announced.

Impact Resistance of Welded Joints, a Survey of the Literature, by W. Spraragen.

Use of Shielded Carbon Arc in Class I Welding, by E. W. P. Smith, consulting engineer.

Impact Values of Weld Metal, by J. C. Hodge, Babcock & Wilcox Co.

OCT 3, A. M.

Manufacture of Small Everdur Tanks by Welding, by Ira T. Hook, American Brass Co.

Welding of Chrome Alloy Steels, by W. B. Miller, Union Carbide & Carbon Research Laboratories.

Gas Welding of Aluminum, author to be announced.

Welding of Non-Ferrous Metals and Alloy Steel, by a representative of the Thomson-Gibb Co.

Welding of Inconel, by J. G. Schoener and F. G. Flocke, International Nickel Co.

OCT. 3, P. M.

American Bureau of Welding—Fundamental Research in Welding.

Physical Properties of Welded Cast Steel, by C. H. Jennings, Westinghouse Electric & Mfg. Co.

Tensile Tests of Welded and Riveted Structural Members, by R. P. Davis and G. P. Boomsliter, West Virginia University.

Electric Arc Welding Under Water, by N. S. Hibshman, W. R. Harvey and C. D. Jensen, Lehigh University.

Effects of Motor Reactions in Electric Welding, by W. R. Woolrich, J. Tarboux, University of Tennessee and C. T. Raymo and W. B. Parker.

Fatigue of Metals, by G. E. Thornton, State College of Washington.

Internal Stresses in Welds, by C. T. Schwarze, New York University.

Magnetic Characteristics of Deposited Metal, by W. F. Hess, Rensselaer Polytechnic Institute.

OCT. 4, A. M.

RESISTANCE WELDING SESSION

Automatic Controls for Electric Welding, by H. W. Roth, president, Controloweld, Inc.

Controlled Welding, by O. C. Frederick, General Electric Co.

Precision Spot Welding with Tube Controlled Contactors, by C. Stansbury, Cutler Hammer, Inc.

Timing of Spot Welders with Reference to Current Flow, by D. C. Wright, chief engineer, Electric Controller and Mfg. Co.

OCT. 4, P. M.

Inspection trip to include visits to the welding departments of the Kelsey Hayes Wheel Corp., Ford Motor Co., and an automobile body plant.

OCT. 5, A. M.

Shipbuilding Welding, by G. H. Moore, Jr., Newport News Shipbuilding & Dry Dock Co.

Welding of Structural Nickel Steel, by W. L. Warner, Watertown Arsenal.

Welding of Galvanized Steel, by Leon C. Bibber, Bureau of Construction & Repair, U. S. Navy.

An Aircraft Manufacturer's Experience with Welding Quality Control, by T. H. Speller, and P. N. Jansen, Curtiss Aeroplane & Motor Co., Inc.

OCT. 5, P. M.

Shop Set-up for Pre-Fabrication of Welded Machinery, by Mr. Kondal, Wickes Boiler Co.

Modern Rail Welding without Interrupting Traffic, by J. H. Deppeler, Metal & Thermit Corpn.

Pressure Regulators and Regulation Problems, by G. M. Deming, Air Reduction Sales Co.

Welding in the Automotive Industry, author to be announced.

Automobile Welding, author to be announced.

Railroad Equipment

Minneapolis Moline Co. will supply 100 underframes for the Western Fruit Express Co.

War Department, United States Engineers, New Orleans, La., is inquiring for bids on Sept. 9 for four electrically propelled asphalt cars of 20 tons capacity.

Alaska Railroad is inquiring for 10 air dump cars.

Louisville & Nashville plans to dismantle 250 locomotives and 4000 freight cars during the next five months.

Western Fruit Express has ordered 100 underframes from Minneapolis Moline Power Implement Co.

Prices of Finished and Semi-Finished Steel, Coke, Coal, Cast Iron Pipe

BARS, PLATES, SHAPES

Iron and Steel Bars

Soft Steel

	Base per Lb.
F.o.b. Pittsburgh mill	1.60c.
F.o.b. Chicago or Gary	1.65c.
Del'd Philadelphia	1.91c.
Del'd New York	1.95c.
F.o.b. Cleveland	1.65c.
F.o.b. Buffalo	1.70c.
F.o.b. Birmingham	1.75c.
F.o.b. dock Pacific ports	2.15c.

Billet Steel Reinforcing
(Stock lengths as quoted by distributers)

F.o.b. P'gh mills	1.80c.
F.o.b. Birmingham	1.85c.
F.o.b. Buffalo	1.85c.
F.o.b. Cleveland	1.85c.
F.o.b. Youngstown	1.85c.
F.o.b. Chicago or Gary	1.85c.

Rail Steel

F.o.b. Pittsburgh (quoted by distributers)	1.75c.
F.o.b. Cleveland (quoted by distributers)	1.80c.
F.o.b. Cleveland (to manufacturers)	1.55c.
F.o.b. Chicago (to merchant trade)	1.55c.
F.o.b. Chicago (quoted by distributers)	1.80c.

Iron

Common iron, f.o.b. Chicago	1.60c.
Refined iron, f.o.b. P'gh mills	2.75c.
Common iron, del'd Philadelphia	1.86c.
Common iron, del'd New York	1.90c.

Steel Car Axles

F.o.b. Pittsburgh ..... 2.50c.

Tank Plates

	Base per Lb.
F.o.b. Pittsburgh mill	1.60c.
F.o.b. Chicago	1.65c.
F.o.b. Gary	1.65c.
F.o.b. Birmingham	1.75c.
Del'd Cleveland	1.8035c.
Del'd Philadelphia	1.7935c.
F.o.b. Coatesville	1.70c.
F.o.b. Sparrows Point	1.70c.
Del'd New York	1.898c.
F.o.b. dock Pacific ports	2.15c.
Wrought iron plates, f.o.b. P'gh	3.00c.

Floor Plates

F.o.b. Pittsburgh	3.10c.
F.o.b. Chicago	3.15c.

Structural Shapes

	Base per Lb.
F.o.b. Pittsburgh mill	1.60c.
F.o.b. Chicago	1.65c.
F.o.b. Birmingham	1.75c.
F.o.b. Buffalo	1.70c.
F.o.b. Bethlehem	1.70c.
Del'd Cleveland	1.8035c.
Del'd Philadelphia	1.8155c.
Del'd New York	1.86775c.
F.o.b. dock Pacific ports (standard)	2.15c.
F.o.b. dock Pacific ports (wide flange)	2.25c.

Steel Sheet Piling

	Base per Lb.
F.o.b. Pittsburgh	1.90c.
F.o.b. Chicago mill	2.00c.
F.o.b. Buffalo	2.00c.

Alloy Steel Bars

(F.o.b. Pittsburgh, Chicago, Buffalo, Bethlehem, Massillon or Canton.)
Alloy Quantity Bar Base..2.45c. to 2.55c. per lb.

S.A.E. Series Numbers	Alloy Differential per 100 Lb.
2000 (½% Nickel)	$0.25
2100 (1½% Nickel)	0.55
2300 (3½% Nickel)	1.50
2500 (5% Nickel)	2.25
3100 Nickel Chromium	0.55
3200 Nickel Chromium	1.35
3300 Nickel Chromium	3.80
3400 Nickel Chromium	3.20
4100 Chromium Molybdenum (0.16 to 0.25 Molybdenum)	0.50
4100 Chromium Molybdenum (0.25 to 0.40 Molybdenum)	0.70
4600 Nickel Molybdenum (0.20 to 0.30 Molybdenum). (1.50 to 2.00 Nickel)	1.05
5100 Chromium Steel (0.60 to 0.90 Chromium)	0.35
5100 Chromium Steel (0.80 to 1.10 Chromium)	0.45
5100 Chromium Spring Steel	0.20
6100 Chromium Vanadium Bar	1.20
4100 Chromium Vanadium Spring Steel	0.95
9250 Silicon Manganese Spring Steel (flats)	0.25
Rounds and Square	0.50
Chromium Nickel Vanadium	1.50
Carbon Vanadium	0.95

Above prices are for hot-rolled steel bars forging quality. The differential for cold-drawn bars is ¾c. a lb. higher, with standard classification for cold-finish alloy steel bars applying. For billets 4 x 4 to 10 x 10 in., the price for a gross ton is the net price for bars of the same analysis.

Billets under 4 x 4 in. carry the steel bar base. Slabs with a section area of 16 in. or over carry the billet price. Slabs with sectional area of less than 16 in. or less than 2½ in. thick, regardless of sectional area, take the bar price.

Cold Finished Bars*

Bars, f.o.b. Pittsburgh Mill	1.95c.
Bars, f.o.b. Chicago	2c.
Bars, Cleveland	2c.
Bars, Buffalo	2c.
Bars, Detroit	2.15c.
Bars, eastern Michigan	2.20c.
Shafting, ground, f.o.b. mill, 1½ in.	3.25c.
1-3/16 to 1½ in.	2.75c.
1-9/16 to 1⅞ in.	2.60c.
1-15/16 to 2¾ in.	2.45c.
2-15/16 to 6 in.	2.30c.

* In quantities of 10,000 to 19,999 lb.

SHEETS, STRIP, TIN PLATE TERNE PLATE

Sheets

Hot Rolled

No. 10, f.o.b. Pittsburgh	1.65c. to 1.75c.
No. 10, f.o.b. Gary	1.75c. to 1.85c.
No. 10, del'd Phila.	1.96c. to 2.06c.
No. 10, f.o.b. Birmingham	1.80c. to 1.90c.
No. 10, f.o.b. dock Pacific ports	2.32½c.

Hot-Rolled Annealed

No. 24, f.o.b. Pittsburgh	2.25c.
No. 24 f.o.b. Gary	2.35c.
No. 24, del'd Philadelphia	2.56c.
No. 24, f.o.b. Birmingham	2.40c.
No 24, f.o.b. dock Pacific ports	2.95c.
No. 24, wrought iron, Pittsburgh	4.30c.

Heavy Cold-Rolled

No. 10 gage, f.o.b. Pitts'h	2.30c.
No. 10 gage, f.o.b. Gary	2.40c.
No. 10 gage, del'd Phila.	2.61c.
No. 10 gage, f.o.b. dock Pacific ports	3.00c.

Light Cold-Rolled

No. 20 gage, f.o.b. Pitts'h	2.75c.
No. 20 gage, f.o.b. Gary	2.85c.
No. 20 gage, del'd Phila.	3.06c.
No. 20 gage, f.o.b. dock Pacific ports	4.45c.

Fender Stock

No. 20, Pittsburgh or Cleveland	2.95c. to 3.10c.

Galvanized Sheets

No. 24, f.o.b. Pittsburgh	2.85c.
No. 24, f.o.b. Gary	2.95c.
No. 24, del'd Philadelphia	3.16c.
No. 24, f.o.b. Birmingham	3.00c.
No. 24, f.o.b. dock Pacific ports	3.55c.
No. 24, wrought iron, Pittsburgh	4.95c.

Long Terne

No. 24, unassorted, 8-lb. coating f.o.b. Pittsburgh	2.90c.

Vitreous Enameling Stock

No. 20, f.o.b. Pittsburgh	2.90c.

Tin Mill Black Plate

No. 28, f.o.b. Pittsburgh	2.50c.
No. 28, Gary	2.60c.

Tin Plate

	Base per Box
Standard cokes, f.o.b. P'gh district mill	$4.65
Standard cokes, f.o.b. Gary	4.75

Terne Plate

(F.o.b. Morgantown or Pittsburgh)
(Per Package, 20 x 28 in.)

8-lb. coating I.C.	$8.70
15-lb. coating I.C.	11.00
20-lb. coating I.C.	11.90
25-lb. coating I.C.	13.00
30-lb. coating I.C.	13.80
40-lb. coating I.C.	15.30

Hot-Rolled Hoops, Bands, Strips and Flats under ¼ In.

	Base per Lb.
All widths up to 24 in., Pittsburgh	1.65c. to 1.75c.
All widths up to 24 in., Chicago	1.75c. to 1.85c.
Cooperage stock, Pittsburgh	1.75c. to 1.85c.
Cooperage stock, Chicago	1.85c. to 1.95c.

Cold-Rolled Strips

F.o.b. Pittsburgh	2.25c. to 2.40c.
F.o.b. Cleveland	2.25c. to 2.40c.
Del'd Chicago	2.55c. to 2.70c.
F.o.b. Worcester	2.45c. to 2.60c.

WIRE PRODUCTS

(Carload lots, f.o.b. Pittsburgh and Cleveland.)

To Manufacturing Trade

	Per Lb.
Bright wire	2.10c.
Spring wire	3.10c.

To Jobbing Trade

Extras of 10c. a 100 lb. on joint carloads and 30c. on pooled cars and less-than-carload lots are applied on all merchant wire products. An allowance of $2 a ton is made to jobbers on straight, mixed or joint carloads; $3 a ton is allowed on less-than-carload shipments.

	Base per Keg
Standard wire nails	$2.10
Smoothed coated nails	2.10
Galvanized nails	3.60

	Base per 100 Lb.
Smooth annealed wire	$2.25
Smooth galvanized wire	2.60
Polished staples	2.80
Galvanized staples	3.05
Barbed wire, galvanized	2.60
Woven wire fence, base column	55.00

Chicago and Anderson, Ind., mill prices are $1 a ton over Pittsburgh base (on all products except woven wire fence, for which the Chicago price is $2 above Pittsburgh); Duluth, Minn., and Worcester, Mass., mill prices are $2 a ton over Pittsburgh (except for woven wire fence at Duluth which is $3 over Pittsburgh), and Birmingham mill prices are $3 a ton over Pittsburgh.

STEEL AND WROUGHT PIPE AND TUBING

Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio Mills

Butt Weld

Steel Inches	Steel Black	Steel Galv.	Wrought Iron Inches	Wrought Iron Black	Wrought Iron Galv.
⅛	51½	29½	⅛	+91½	+138
¼ to ⅜	57	38½	¼ & ⅜	+11½	+21½
½	62	50½	½	31½	15
¾	65½	55½	¾	36½	20½
1 to 3	67½	58½	1 & 1¼	39½	25½
			1½	43½	28
			2	41½	26

Lap Weld

2	63½	51½	2	37	22½
2½ to 3	66½	57½	2½ to 3½	38	25
3½ to 6	68½	59½	4 to 8	40	28½
7 and 8	67½	57½	9 to 12	38	24½
9 and 10	67	57			
11 and 12	66	56			

Butt Weld, extra strong, plain ends

⅛	48½	33½	⅛	+13	+45½
¼ to ⅜	54½	41½	¼ & ⅜	+2½	+34½
½	60	51	½	32½	17½
¾	64½	55½	¾	37½	22½
1 to 3	66½	58½	1 to 2	43½	29

Lap Weld, extra strong, plain ends

2	61½	53½	2	40	26
2½ to 3	65½	57½	2½ to 4	45½	33
3½ to 6	69	61	4½ to 6	45	32½
7 to 8	68	58	7 & 8	46	33
9 and 10	67	57	9 to 12	41½	30
11 and 12	66	56			

Discounts on steel and wrought iron pipe are net and not subject to any points or preferentials.

Note—Chicago district mills have a base two points less than the above discounts. Chicago delivered base is 2½ points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

Boiler Tubes

Base Discounts, f.o.b. Pittsburgh

Steel

2 in. and 2¼ in.	33
2½ in.—2¾ in.	40
3 in.	47
3¼ in.—4½ in.	50
4 in.	52
4½ in. to 6 in.	42

Charcoal Iron

1½ in.	1
1¾ in.	8
2 in.—2¼ in.	13
2½ in.—2¾ in.	16
3 in.	17
3¼ in. to 3½ in.	18
4 in.	20
4½ in.	21

On lots of a carload or more, the above base discounts are subject to a preferential of two fives on steel and of 10 per cent on charcoal iron tubes. Smaller quantities are subject to the following modifications from the base discounts:

Lap welded Steel—Under 10,000 lb., 6 points under base and one five; 10,000 lb. to carload 4 points under base and two fives. Charcoal Iron—Under 10,000 lb., 2 points under base; 10,000 lb. to carload, base and one five.

Standard Commercial Seamless Boiler Tubes

Cold-Drawn

1 in.	61
1¼ to 1½ in.	53
1¾ in.	37
2 to 2¼ in.	27
2½ to 2¾ in.	34
3 in.	41
3¼ to 3½ in.	44
4 in.	46
4½, 5 and 6 in.	36

Hot Rolled

2 and 2¼ in.	33
2½ and 2¾ in.	40
3 in.	47
3¼ to 3½ in.	50
4 in.	52
4½, 5 and 6 in.	42

Beyond the above base discounts a preferential discount of 5 per cent is allowed on carload lots. On less than carloads to 10,000 lb. base discounts are reduced 4 points with 5 per cent preferential; on less than 10,000 lb., base discounts are reduced 6 points with no preferential. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. in lighter than standard gages take the mechanical tube list and discounts. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Mechanical Tubing

Per Cent Off List

Carbon, 0.10% to 0.30% base (carloads)	5
Carbon, 0.30% to 40% base	5

Plus differential for lengths over 18 ft. and for commercial exact lengths. Warehouse discounts on small lots are less than the above.

RAILS AND TRACK SUPPLIES

F.o.b. Mill

	Per Gross Ton
Standard rails, 60-lb. and heavier	$40.00
Angle bars, per 100 lb.	2.25

F.o.b. Code Basing Points

	Base per 100 Lb.
Light rails (from billets) per gross ton	$34.00
Light rails (from rail steel) per gross ton	32.00
Spikes, 9/16 in. and larger	3.00
Spikes, ⅜-in. and smaller	3.60
Spikes, boat and barge	3.60
Tie plates, steel	1.80
Angle bars	2.80
Track bolts, to steam railroads	3.60
Track bolts, to jobbers, all sizes (per 100 count)	73 per cent off list

BOLTS, NUTS, RIVETS AND SET SCREWS

Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

	Per Cent Off List
Machine bolts	70
Carriage bolts	70
Lag bolts	70
Plow bolts, Nos. 1, 2, 3 and 7 heads	70
Hot-pressed nuts, blank or tapped, square	70
Hot-pressed nuts, blank or tapped, hexagons	70
C.p.c. and t. square or hex nuts, blank or tapped	70
Semi-finished hexagon nuts	70
Semi-finished hexagon castellated nuts, S.A.E.	70
Stove bolts in packages, P'gh, 72¼, 25 and 10	
Stove bolts in packages, Ch'go, 72¼, 25 and 10	
Stove bolts in packages, Cleveland, 72¼, 25 and 10	
Stove bolts in bulk, P'gh	60
Stove bolts in bulk, Chicago	60
Stove bolts in bulk, Cleveland	60
Tire bolts	60

Large Rivets
(½-in. and larger)

	Base per 100 Lb.
F.o.b. Pittsburgh or Cleveland	$2.85
F.o.b. Chicago	3.00

Small Rivets
(7/16-in. and smaller)

	Per Cent Off List
F.o.b. Pittsburgh	70, 10 and 5
F.o.b. Cleveland	70, 10 and 5
F.o.b. Chi'o and Birm'g'm	70, 10 and 5

Cap and Set Screws

(Freight allowed up to but not exceeding 65c. per 100 lb. on lots of 200 lb. or more)

	Per Cent Off List
Milled cap screw, 1 in. dia. and smaller	70
Milled standard set screws, case hardened, 1 in. dia. and smaller	60
Milled headless set screws, cut thread ¾ in. and smaller	75 and 10
Upset hex. head cap screws, U.S.S. or S.A.E. thread, 1 in. dia. and smaller	85 and 10
Upset set screws, sq. head	70
Milled studs	70

SEMI-FINISHED STEEL

Billets, Blooms and Slabs

	Per Gross Ton
Rerolling, 4-in. to 9-in. inclusive Pittsburgh	$30.00
Rerolling, 4-in. to 9-in. inclusive Youngstown	30.00
Rerolling, 4-in. to 9-in. inclusive Cleveland	30.00
Rerolling, 4-in. to 9-in. inclusive Chicago	31.00
Forging quality, Pittsburgh	31.00
Forging quality, Youngstown	31.00
Forging quality, Chicago	31.00
Forging quality, Gary	31.00
Forging quality, Buffalo	31.00
Forging quality, Cleveland	31.00
Forging quality, Birmingham	31.00

Sheet Bars

(Open-Hearth or Bessemer)

	Per Gross Ton
Pittsburgh	$28.00
Youngstown	28.00
Cleveland	28.00
Chicago	28.00
Buffalo	28.00
Canton	28.00

Skelp

(F.o.b. Pittsburgh, Youngstown, Chicago, Buffalo, Coatesville, Pa., or Sparrows Point Md.)

	Per Lb.
Grooved	1.60c.
Universal	1.60c.
Sheared	1.60c.

Wire Rods

(Common soft, base)

	Per Gross Ton
Pittsburgh	$35.00
Cleveland	35.00
Chicago	36.00
Birmingham	38.00
Youngstown (del'd)	36.00

COKE, COAL AND FUEL OIL

Coke

	Per Net Ton
Furnace, f.o.b. Connellsville Prompt	$2.50 to $2.75
Foundry, f.o.b. Connellsville Prompt	3.25 to 4.50
Foundry, by-product, Chicago ovens, for delivery outside switching districts	8.00
Foundry, by-product, delivered in Chicago switching district	8.75
Foundry, by-product, New England, delivered	10.50
Foundry, by-product, Newark or Jersey City, del'd	8.20 to 8.81
Foundry, by-product, Phila.	8.50
Foundry, by-product, Cleveland, delivered	8.76
Foundry, Birmingham	5.00
Foundry, by-product, St. Louis, f.o.b ovens	8.00
Foundry, by-product, del'd St. Louis	9.00

Coal (Nominal)

	Per Net Ton
Mine run steam coal, f.o.b. W. Pa. mines	$1.50 to $2.00
Mine run coking coal f.o.b. W. Pa.	1.75 to 2.25
Gas coal, ¾-in., f.o.b. Pa. mines	2.00 to 2.50
Mine run gas coal, f.o.b. Pa. mines	2.00 to 2.25
Steam slack, f.o.b. W. Pa. mines	85c. to 1.00
Gas slack, f.o.b. W. Pa. mines	1.00 to 1.25

Fuel Oil

Per Gal. f.o.b. Bayonne, N. J.	
No. 3 distillate	4.00c.
No. 4 industrial	3.50c.
Per Gal. f.o.b. Baltimore	
No. 3 distillate	4.00c.
No. 4 industrial	3.50c.
Per Gal. del'd Chicago	
No. 3 industrial fuel oil	3.73c.
No. 5 industrial fuel oil	3.23c.
Per Gal. f.o.b. Cleveland	
No. 3 distillate	5.50c.
No. 4 industrial	5.00c.

REFRACTORIES

Fire Clay Brick

	Per 1000 f.o.b. Works: High-heat Duty Brick	Intermediate Duty Brick
Pennsylvania	$45.00	$40.00
Maryland	45.00	40.00
New Jersey	55.00	43.00
Ohio	45.00	40.00
Kentucky	45.00	40.00
Missouri	45.00	40.00
Illinois	45.00	40.00
Ground fire clay, per ton	7.00	

Chrome Brick

	Per Net Ton
Standard size	$45.00

Silica Brick

	Per 1000 f.o.b. Works
Pennsylvania	$45.00
Chicago	54.00
Birmingham	55.00
Silica clay, per ton	8.00

Magnesite Brick

	Per Net Ton
Standard sizes, burned, f.o.b. Baltimore and Chester, Pa.	$65.00
Unburned, f.o.b. Baltimore	52.00
Grain magnesite, f.o.b. Baltimore and Chester, Pa.	40.00
Domestic, f.o.b. Chewelah, Wash.	22.00

CAST IRON PIPE

	Per Net Ton
4-in. and larger, del'd Chicago	$43.40 to $44.10
4-in., del'd Chicago	46.40 to 47.40
4-in., and larger, del'd New York	38.30
4-in., del'd New York	41.30
4-in., and larger, Birmingham	$35.00 to 36.00
4-in., Birmingham	38.00 to 39.00

Class "A" and gas pipe, $3 extra.

Pig Iron, Ores, Ferroalloys

PRICES PER GROSS TON AT BASING POINTS

Basing Points	No. 2 Fdry.	Malleable	Basic	Bessemer
Everett, Mass.	$18.00	$18.50	$17.50	$19.00
Bethlehem, Pa.	17.50	18.00	17.00	18.50
Birdsboro, Pa.	17.50	18.00	17.00	18.50
Swedeland, Pa.	17.50	18.00	17.00	18.50
Sparrows Point, Md.	17.50	18.00	17.00	18.50
Neville Island, Pa.	18.00	18.00	17.50	18.50
Sharpsville, Pa.	17.50	17.50	17.00	18.00
Youngstown	17.50	17.50	17.00	18.00
Buffalo	17.50	18.00	16.50	18.50
Erie, Pa.	17.50	18.00	17.00	18.50
Cleveland	17.50	17.50	17.00	18.00
Toledo, Ohio	17.50	17.50	17.00	18.00
Detroit	17.50	17.50	17.00	18.00
Hamilton, Ohio	17.50	17.50	17.00	18.00
Chicago	17.50	17.50	17.00	18.00
Granite City, Ill.	17.50	18.00	17.00	....
Duluth, Minn.	18.00	18.00	....	18.50
Birmingham	13.50	....	12.50	....
Provo, Utah	....	....	....	....

DELIVERED PRICES PER GROSS TON AT CONSUMING CENTERS

	No. 2 Fdry.	Malleable	Basic	Bessemer
Boston and nearby New England From Everett, Mass.	$19.00	$19.50	$18.50	$20.00
From Buffalo	19.00	19.50	18.50	20.00
From Alabama	18.62	19.12	18.12	19.62
Brooklyn From East. Pa. or Buffalo	19.90	20.40	19.40	20.90
Eastern New Jersey From East. Pa. or Buffalo	19.02	19.52	18.52	20.02
Philadelphia From Eastern Pa.	18.34	18.84	17.84	19.34
Cincinnati From Hamilton, Ohio	18.63	18.63	18.13	19.13
From the South	18.63	....	17.63	....
Cleveland From the South	18.13	....	....	....
Chicago From the South	16.14 to 17.14	....	....	....

St. Louis

From the South (delivered prices are uniformly quoted at 38c. a ton less than delivered prices from Granite City, the switching charges from the latter point ranging from 56c. to 75c. a ton).

LOW PHOSPHORUS PIG IRON

Basing points: Birdsboro, Pa., Steelton, Pa., and Standish, N. Y. $22.00

GRAY FORGE PIG IRON

Valley furnace $17.50

CHARCOAL PIG IRON

Lake Superior furnace	$20.50
Delivered Chicago	23.67
Delivered Buffalo	23.91

CANADA

Per gross ton:

Delivered Toronto	
No. 1 fdy., sil. 2.25 to 2.75	$21.00
No. 2 fdy., sil. 1.75 to 2.75	20.50
Malleable	21.00
Delivered Montreal	
No. 1 fdy., sil. 2.25 to 2.75	$22.50
No. 2 fdy., sil. 1.75 to 2.25	22.00
Malleable	22.50
Basic	22.00

Ferromanganese

	Per Gross Ton
Domestic, 80%, seaboard, (carloads)	$82.00
Domestic, 80%, seaboard, (less carloads)	89.00

Spiegeleisen

	Per Gross Ton Furnace
Domestic, 19 to 21%	$27.00

Electric Ferrosilicon

	Per Gross Ton Delivered
50% (carloads)	$74.50
50% (less carloads)	82.00
75% (carloads)	120.00
75% (less carloads)	130.00
14% to 16% (f.o.b.) Welland, Ont. (in carloads)	31.00
14% to 16% (less carloads)	36.00

Silvery Iron

F.o.b. Jackson, Ohio, Furnace

Per Gross Ton		Per Gross Ton	
6%	$22.25	12%	$29.25
7%	23.25	13%	30.75
8%	24.25	14%	32.25
9%	25.25	15%	33.75
10%	26.25	16%	35.25
11%	27.75	17%	36.75

Bessemer Ferrosilicon

F.o.b. Jackson, Ohio, Furnace

Per Gross Ton		Per Gross Ton	
10%	$27.25	14%	$33.25
11%	28.75	15%	34.75
12%	30.25	16%	36.25
13%	31.75	17%	37.75

Manganese 1½ to 3%, $1 a ton additional. For each unit of manganese over 3%, $1 a ton additional. Phosphorus 0.75% or over, $1 a ton additional.

Other Ferroalloys

Ferrotungsten, per lb. wo. del., carloads	94c.
Ferrotungsten, less carloads	$1.00
Ferrochromium, 4 to 6% carbon and up, 65 to 70% Cr., per lb. contained Cr. delivered, in carloads	9.50c.
Ferrochromium, 2% carbon	16.50c. to 17.00c.
Ferrochromium, 1% carbon	17.50c. to 18.00c.
Ferrochromium, 0.10% carbon	19.50c. to 20.00c.
Ferrochromium, 0.06% carbon	20.00c. to 20.50c.
Ferrovanadium, del., per lb. contained Va.	$2.60 to 2.80
Ferrocarbontitanium, 15 to 18% per net ton, f.o.b. furnace in carloads	160.00
Ferrophosphorus, electric, or blast furnace material, in carloads, 18%, Rockdale, Tenn., base, per gross ton with $2 unitage	50.00
Ferrophosphorous, electric, 24% f.o.b. Anniston, Ala., per gross ton with $2.75 unitage	65.00
Ferromolybdenum, per lb. Mo., del.	95c.
Calcium molybdate, per lb. Mo., del.	80c.
Silico spiegel, per ton, f.o.b. furnace, car lots	$36.00
Ton lots or less, per ton	41.00
Silico-manganese, gross ton, delivered:	
2.50% carbon grade	85.00
2% carbon grade	90.00
1% carbon grade	100.00
Spot prices	$5 a ton higher

Ores

Lake Superior Ores, Delivered Lower Lake Ports

	Per Gross Ton
Old range, Bessemer, 51.5% iron	$4.80
Old range, non-Bessemer, 51.50% iron	4.65
Mesabi Bessemer, 51.50% iron	4.65
Mesabi non-Bessemer, 51.50% iron	4.50
High phosphorous, 51.50% iron	4.40

Foreign Ore, c.i.f. Philadelphia or Baltimore

	Per Unit
Iron, low phos., copper free, 55 to 58% iron, dry Spanish or Algerian	8c.
Iron, low phos., Swedish, average 64½% iron	8.50c.
Iron, basic or foundry, Swedish, average, 65% iron	8c.
Iron, basic or foundry, Russian, aver. 65% iron (nom.)	8c.
Manganese, Caucasian, washed 52%	22c.
Manganese, African, Indian, 44-48%	20c.
Manganese, African, Indian, 49-51%	21c.
Manganese, Brazilian, 46 to 48%	17c.

	Per Net Ton Unit
Tungsten, Chinese wolframite, duty paid*	$12.00
Tungsten, domestic scheelite*	$11.00 to $12.00

	Per Gross Ton
Chrome, 45%, Cr_2O_3, crude, c.i.f. Atlantic Seaboard	16.00
Chrome, 48%, Cr_2O_3, c.i.f. Atlantic seaboard	18.00

*Quotations nominal in absence of sales.

Fluorspar

	Per Net Ton
Domestic, washed gravel, 85-5 f.o.b. Kentucky and Illinois mines	$15.00
No. 2 lump, 85-5, f.o.b. Kentucky and Illinois mines	16.00
Foreign, 85% calcium fluoride, not over 5% silicon, c.i.f. Atlantic port, duty paid	17.90
Domestic, No. 1 ground bulk, 85 to 98% calcium fluoride, not over 2½% silicon, f.o.b. Illinois and Kentucky mines	30.00

Iron and Steel Scrap

PITTSBURGH

Per gross ton delivered consumers' yards:

No. 1 heavy melting steel	$12.50 to $13.50
No. 2 heavy melting steel	11.00 to 11.50
No. 2 railroad wrought	12.75 to 13.25
Scrap rails	12.75 to 13.25
Rails 3 ft. and under	15.50 to 16.00
Sheet bar crops, ordinary	13.50 to 14.00
Compressed sheet steel	12.75 to 13.25
Hand bundled sheet steel	11.75 to 12.25
Hvy. steel axle turnings	12.00 to 12.50
Machine shop turnings	10.00 to 10.50
Short shov. steel turnings	10.50 to 11.00
Short mixed borings and turnings	9.00 to 9.50
Cast iron borings	9.00 to 9.50
Cast iron carwheels	12.50 to 13.00
Heavy breakable cast	10.50 to 11.00
No. 1 cast	11.50 to 12.00
Railr. knuckles and couplers	15.00 to 15.50
Rail. coil and leaf springs	15.00 to 15.50
Rolled steel wheels	15.00 to 15.50
Low phos. billet crops	16.00 to 16.50
Low phos. sheet bar crops	15.50 to 16.00
Low phos. plate scrap	15.00 to 15.50
Low phos. punchings	15.50 to 16.00
Steel car axles	16.00 to 16.50

CHICAGO

Delivered Chicago district consumers:

	Per Gross Ton
Heavy melting steel	$10.00
Shoveling steel	10.00
Hydraulic comp. sheets	$8.50 to $9.00
Drop forge flashings	8.00 to 8.50
No. 1 busheling	8.25 to 8.75
Rolled carwheels	11.50 to 12.00
Railroad tires	11.25 to 12.25
Railroad leaf springs	11.50 to 12.00
Axle turnings	8.50 to 9.00
Steel couplers and knuckles	11.00 to 11.50
Coil springs	11.75 to 12.25
Axle turnings (elec. fur.)	8.50 to 9.00
Low phos. punchings	12.00 to 12.50
Low phos. plates, 12 in. and under	12.00 to 12.50
Cast iron borings	6.50 to 7.00
Short shoveling turnings	6.50 to 7.00
Machine shop turnings	6.00 to 6.50
Rerolling rails	11.50 to 12.00
Steel rails, less than 3 ft.	11.75 to 12.25
Steel rails, less than 2 ft.	12.50 to 13.00
Angle bars, steel	11.00 to 11.50
Cast iron carwheels	10.50 to 11.00
Railroad malleable	9.50 to 10.00
Agricultural malleable	8.00 to 8.50

	Per Net Ton
Iron car axles	$12.50 to $13.00
Steel car axles	11.00 to 11.50
No. 1 railroad wrought	9.00 to 9.50
No. 2 railroad wrought	9.00 to 9.50

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No. 2 busheling	$4.00 to	$4.50
Locomotive tires, smooth	9.00 to	9.50
Pipe and flues	4.75 to	5.25
No. 1 machinery cast	10.00 to	10.50
Clean automobile cast	10.00 to	10.50
No. 1 railroad cast	9.50 to	10.00
No. 1 agricultural cast	8.75 to	9.25
Stove plate	7.00 to	7.50
Grate bars	6.75 to	7.25
Brake shoes	8.75 to	9.25

PHILADELPHIA

Per gross ton delivered consumers' yards:

No. 1 heavy melting steel	$11.00 to	$11.50
No. 2 heavy melting steel	10.00 to	10.50
No. 1 railroad wrought	....	12.00
Bundled sheets	8.50 to	9.00
Hydraulic compressed, new	10.50 to	11.00
Hydraulic compressed, old	8.50 to	9.00
Machine shop turnings	....	8.00
Heavy axle turnings	10.00 to	10.50
Cast borings	....	7.00
Heavy breakable cast	10.00 to	10.50
Stove plate (steel works)	....	9.50
No. 1 low phos. heavy	....	15.00
Couplers and knuckles	....	14.00
Rolled steel wheels	....	14.00
No. 1 blast furnace	....	7.00
Spec. iron and steel pipe	10.00 to	10.50
Shafting	15.00 to	15.50
Steel Axles	15.00 to	15.50
No. 1 forge fire	....	10.50
Cast iron carwheels	12.50 to	13.00
No. 1 cast	12.00 to	13.00
Cast borings (chem.)	12.00 to	14.00
Steel rails for rolling	12.00 to	12.50

CLEVELAND

Per gross ton delivered consumers' yards:

No. 1 heavy melting steel	$10.50 to	$11.00
No. 2 heavy melting steel	10.25 to	10.75
Compressed sheet steel	9.50 to	10.00
Light bundled sheet stampings	6.50 to	7.00
Drop forge flashings	9.50 to	10.00
Machine shop turnings	7.00 to	7.50
Short shoveling turnings	7.50 to	8.00
No. 1 busheling	9.50 to	10.00
Steel axle turnings	7.50 to	8.00
Low phos. billet crops	12.50 to	13.00
Cast iron borings	7.50 to	8.00
Mixed borings and short turnings	7.50 to	8.00
No. 2 busheling	7.25 to	7.75
No. 1 cast	11.00 to	11.50
Railroad grate bars	6.50 to	7.00
Stove plate	7.50 to	8.00
Rails under 3 ft.	10.00 to	10.50
Rails for rolling	10.50 to	11.00
Railroad malleable	10.00 to	10.50
Cast iron carwheels	....	11.00

BUFFALO

Per gross ton, f.o.b. Buffalo consumers' plants:

No. 1 heavy melting steel	$10.50 to	$11.00
No. 2 heavy melting scrap	10.00 to	10.50
Scrap rails	8.75 to	9.25
New hydraul. comp. sheets	10.00 to	10.50
Old hydraul. comp. sheets	9.50 to	10.00
Drop forge flashings	10.00 to	10.50
No. 1 busheling	10.00 to	10.50
Hvy. steel axle turnings	8.50 to	9.00
Machine shop turnings	6.50 to	7.00
Knuckles and couplers	11.50 to	12.00
Coil and leaf springs	11.50 to	12.00
Rolled steel wheels	11.50 to	12.00
Low phos. billet crops	12.50 to	13.00
Short shov. steel turnings	7.00 to	7.50
Short mixed borings and turnings	7.00 to	7.50
Cast iron borings	6.50 to	7.00
No. 2 busheling	6.00 to	6.50
Steel car axles	11.00 to	12.00
Iron axles	11.00 to	12.00
No. 1 machinery cast	11.25 to	12.25
No. 1 cupola cast	11.00 to	12.00
Stove plate	8.75 to	9.25
Steel rails, 3 ft. and under	13.50 to	14.00
Cast iron carwheels	10.00 to	10.50
Industrial malleable	11.50 to	12.00
Railroad malleable	12.00 to	12.50
Chemical borings	9.00 to	10.00

BIRMINGHAM

Per gross ton delivered consumers' yards:

Heavy melting steel	$10.00 to	$10.50
Scrap steel rails	....	10.00
Short shoveling turnings	....	5.50
Stove plate	7.00 to	7.50
Steel axles	11.00 to	11.50
Iron axles	11.00 to	11.50
No. 1 railroad wrought	7.00 to	7.50
Rails for rolling	....	11.50
No. 1 cast	9.50 to	10.00
Tramcar wheels	9.50 to	10.00
Cast iron borings, chem.	....	8.00

ST. LOUIS

Per gross ton delivered consumers' yards:

Selected heavy steel	$9.75 to	$10.25
No. 1 heavy melting	9.00 to	9.50
No. 2 heavy melting	8.25 to	8.75
No. 1 locomotive tires	7.50 to	8.00
Misc stand.-sec. rails	10.00 to	10.50
Railroad springs	10.00 to	10.50
Bundled sheets	6.00 to	6.50
No. 2 railroad wrought	9.00 to	9.50
No. 1 busheling	4.75 to	5.25
Cast iron borings and shoveling turnings	4.50 to	5.00
Rails for rolling	10.50 to	11.00
Machine shop turnings	4.50 to	5.00
Heavy turnings	4.50 to	5.00
Steel car axles	10.00 to	10.50
Iron car axles	11.00 to	11.50
Wrot. iron bars and trans.	9.00 to	9.50
No. 1 railroad wrought	6.50 to	7.00
Steel rails less than 3 ft.	11.50 to	12.00
Steel angle bars	10.00 to	10.50
Cast iron carwheels	8.50 to	9.00
No. 1 machinery cast	8.50 to	9.00
Railroad malleable	9.00 to	9.50
No. 1 railroad cast	8.50 to	9.00
Stove plate	7.00 to	7.50
Relay rails, 60 lb. and under	16.00 to	16.50
Relay rails, 60 lb. and over	$20.00 to	$21.00
Agricult. malleable	6.00 to	6.50

BOSTON

Dealers' buying prices per gross ton:

No. 1 heavy melting steel	$7.00 to	$7.50
Scrap T rails	6.75 to	7.25
Machine shop turnings	4.00 to	4.25
Cast iron borings	4.00 to	4.25
Bundled skeleton, long	5.50 to	6.00
Forge flashings	4.75 to	5.00
Blast furnace scrap	4.75 to	5.00
Shafting	9.00 to	9.50
Steel car axles	8.50 to	9.00
Wrought pipe	3.50 to	4.00
Rails for rerolling	6.00 to	6.50
Cast iron borings, chemical	11.00 to	11.50

Per gross ton delivered consumers' yards:

Textile cast	$10.00 to	$10.25
No. 1 machinery cast	10.00 to	10.25
Stove plate	6.25 to	6.50
Railroad malleable	11.00 to	12.00

NEW YORK

Dealers' buying prices per gross ton:

No. 1 heavy melting steel	$7.00 to	$8.00
No. 2 heavy melting steel	6.50 to	7.00
Unprepared yard iron and steel	3.50 to	4.00
No. 1 heavy breakable cast	6.00 to	6.25
Machine shop turnings	..	3.50
Short shoveling turnings	..	3.50
Cast borings	4.50 to	4.75
No. 1 blast furnace	3.50 to	4.00
Steel car axles	10.00 to	10.50
Spec. iron and steel pipe	$4.50 to	$5.00
Forge fire	5.50 to	6.00
No. 1 railroad wrought	6.50 to	7.00
No. 1 yard wrought, long	4.50 to	5.00
Rails for rolling	8.50 to	9.00
No. 1 cast	7.00 to	7.50
No. 2 cast	6.50 to	7.00
Stove plate	6.00 to	6.50
Cast borings (chemical)	12.00 to	12.50

Per gross ton, delivered local foundries:

No. 1 machinery cast	$11.00
No. 1 hvy. cast (cupola size)	9.00
No. 2 cast	8.00

CINCINNATI

Dealers' buying prices per gross ton:

Heavy melting steel	$9.50 to	$10.00
Scrap rails for melting	9.25 to	9.75
Loose sheet clippings	5.00 to	5.50
Bundled sheets	6.00 to	6.50
Cast iron borings	6.00 to	6.50
Machine shop turnings	5.50 to	6.00
No. 1 busheling	7.00 to	7.50
No. 2 busheling	3.50 to	4.00
Rails for rolling	9.75 to	10.25
No. 1 locomotive tires	8.50 to	9.00
Short rails	11.50 to	12.00
Cast iron carwheels	8.50 to	9.00
No. 1 machinery cast	9.50 to	10.00
No. 1 railroad cast	9.00 to	9.50
Burnt cast	7.00 to	7.50
Stove plate	7.00 to	7.50
Agricultural malleable	8.75 to	9.25
Railroad malleable	9.25 to	9.75

DETROIT

Dealers' buying prices per gross ton:

Hvy. melting steel	$8.50 to	$9.00
Borings and short turnings	6.50 to	7.00
Long turnings	5.75 to	6.25
No. 1 machinery cast	8.00 to	8.50
Automotive cast	9.50 to	10.00
Hydraul. comp. sheets	8.50 to	9.00
Stove plate	6.00 to	6.50
New factory busheling	7.50 to	8.00
Old No. 2 busheling	5.50 to	6.00
Sheet clippings	5.50 to	6.00
Flashings	6.50 to	7.00
Low phos. plate scrap	9.25 to	9.75

CANADA

Dealers' buying prices per gross ton:

	Toronto	Montreal
Heavy melting steel	$5.50	$5.50
Rails, scrap	6.00	4.50
Machine shop turnings	2.50	2.50
Boiler plate	4.50	4.50
Heavy axle turnings	2.50	2.50
Cast borings	3.00	3.00
Steel borings	2.00	2.00
Wrought pipe	2.50	2.50
Steel axles	4.50	6.00
Axles, wrought iron	4.50	6.50
No. 1 machinery cast	7.75	9.00
Stove plate	4.50	*
Standard carwheels	7.25	
Malleable	6.75	

Warehouse Prices for Steel Products

PITTSBURGH

	Base per Lb.
Plates	2.85c.
Structural shapes	2.85c.
Soft steel bars and small shapes	2.60c.
Reinforcing steel bars	2.60c.
Cold-finished and screw stock—	
Rounds and hexagons	3.20c.
Squares and flats	3.20c.
Hoops and bands, under ¼ in.	2.95c.
Hot-rolled annealed sheets (No. 24), 25 or more bundles	3.15c.
Galv. sheets (No. 24), 25 or more bundles	3.50c.
Hot-rolled sheets (No. 10)	2.50c.
Galv. corrug. sheets (No. 28), per square (more than 3750 lb.)	$3.32
Spikes, large	2.40c.
Small	2.65c.
Boat	2.90c.
Track bolts, all sizes, per 100 count, 70 per cent off list.	
Machine bolts, 100 count, 70 per cent off list.	
Carriage bolts, 100 count, 70 per cent off list.	
Nuts, all styles, 100 count, 70 per cent off list.	
Large rivets, base per 100 lb.	$3.25
Wire, black, soft ann'l'd, base per 100 lb.	2.90
Wire, galv. soft, base per 100 lb.	3.35
Common wire nails, per keg	2.45
Cement coated nails, per keg	2.45

On plates, structurals, bars, reinforcing bars, bands, hoops and blue annealed sheets, base applied to orders of 400 to 999 lb.

CHICAGO

	Base per Lb.
Plates and structural shapes	3.00c.
Soft steel bars	2.75c.
Cold-fin. steel bars and shafting	
Rounds and hexagons	3.25c.
Flats and squares	3.25c.
Bands, 3/16 in. (in Nos. 10 and 12 gages)	2.95c.
Hoops (No. 14 gage and lighter)	3.50c.
Hot-rolled annealed sheets (No. 24)	3.45c.
Galv. sheets (No. 24)	4.10c.
Hot-rolled sheets (No. 10)	2.85c.
Spikes (9/16 in. and lighter)	3.45c.
Track bolts	4.30c.
Rivets, structural (keg lots)	3c.
Rivets, boiler (keg lots)	3c.
	Per Cent Off List
Machine bolts	65
Carriage bolts	65
Coach and lag screws	65
Hot-pressed nuts, sq., tap. or blank	65
Hot-pressed nuts, hex., tap. or blank	65
Hex. head cap screws	80 and 10
Cup point set screws	75
Flat head bright wood screws	50 and 10
Spring cotters	60 and 10
Stove bolts	72½
Rd. hd. tank rivets, 7/16 in. and smaller	65
Wrought washers	$5.50 off list
No. 8 black ann'l'd wire per 100 lb.	$3.45
Com. wire nails, base per keg	2.55
Cement c't'd nails, base per keg	2.55

NEW YORK

	Base per lb.
Plates and struc. shapes	3.10c.
Soft steel bars, small shapes	3.10c.
Iron bars	3.24c.
Iron bars, swed. charcoal	6.00c. to 6.50c.
Cold-fin. shafting and screw stock;	
Rounds and hexagons	3.79c.
Flats and squares	4.29c.
Cold-roll. strip, soft and quarter hard	4.55c.
Hoops	3.30c.
Bands	3.30c.
Hot-rolled sheets (No. 10)	3.00c.
Hot-rolled ann'l'd sheets (No. 24*)	3.65c.
Galvanized sheets (No. 24*)	4.00c.
Long terne sheets (No. 24)	4.50c.
Standard tool steel	12.00c.
Wire, black annealed (No. 10)	3.60c.
Wire, galv. annealed (No. 10)	4.05c.
Tire steel ⅛ x ⅝ in. and larger	3.40c.
Smooth finish, 1 to 2½ x ¼ in. and larger	3.75c.
Open hearth spring steel, bases	3.75c. to 10.00c.
Common wire nails, base, per keg	$2.90
	Per Cent Off List*
Machine bolt, cut thread: ⅝ x 6 in. and smaller	65
1 x 30 in. and smaller	65
Carriage bolts, cut thread: ½ x 6 in. and smaller	65
¾ x 20 in. and smaller	65
Boiler tubes:	Per 100 Ft.
Lap welded, 2-in.	$18.05
Seamless welded, 2-in.	19.24
Charcoal iron, 2-in.	24.94
Charcoal iron, 4-in.	63.65

*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.

ST. LOUIS

	Base per Lb.
Plates and struc. shapes	3.25c.
Bars, soft steel or iron	3.00c.
Cold-fin. rounds, shafting, screw stock	3.61c.
Hot-rolled annealed sheets (No. 24)	3.60c.
Galv. sheets (No. 24)	4.25c.
Hot-rolled sheets (No. 10)	3.10c.
Black corrug. sheets (No. 24)	3.65c.
Galv. corrug. sheets	4.30c.
Structural rivets	3.25c.
Boiler rivets	3.25c.
	Per Cent Off List
Tank rivets, 7/16 in. and smaller, 100 lb. or more	65
Less than 100 lb.	65
Machine bolts	65
Carriage bolts	65
Lag screws	65
Hot-pressed nuts, sq. blank or tapped, 200 lb. or more	65
Less than 200 lb.	55
Hot-pressed nuts, hex., blank or tapped, 200 lb. or more	65
Less than 200 lb.	55

PHILADELPHIA

	Base per Lb.
*Plates, ¼-in. and heavier	2.60c.
*Structural shapes	2.60c.
*Soft steel bars, small shapes, iron bars (except bands)	2.60c.
Reinforc. steel bars, sq., twisted and deform.	2.30c.
Cold-finished steel bars	3.60c.
*Steel hoops	3.15c.
*Steel bands, No. 12 to 3/16 in., incl.	2.90c.
Spring steel	5.00c.
†Hot-rolled annealed sheets (No. 24)	3.30c.
†Galvanized sheets (No. 24)	3.75c.
*Hot-rolled annealed sheets (No. 10)	2.75c.
Diam. pat. floor plates, ⅛ in.	4.35c.
Swedish iron bars	6.00c.

These prices are subject to quantity differentials except on reinforcing and Swedish iron bars.

*Base prices subject to deductions on orders aggregating 4000 lb. or over.

†For 50 bundles or over.

CLEVELAND

	Base per Lb.
Plates and struc. shapes	2.95c.
Soft steel bars	2.75c.
Reinforc. steel bars	1.75c. to 2.35c.
Cold-fin. steel bars:	
Rounds, squares, hexagons	3.25c.
Flats	3.40c.
Flat rolled steel under ¼ in.	3.00c.
Cold-finished strip	3.55c.
Hot-rolled annealed sheets (No. 24)	3.25c.
Galvanized sheets (No. 24)	3.85c.
Hot-rolled sheets (No. 10)	2.75c.
Black ann'l'd wire, per 100 lb.	$2.55
No. 9 galv. wire, per 100 lb.	2.90
Com. wire nails, base per keg	2.35

*Net base, including boxing and cutting to length.

CINCINNATI

	Base per Lb.
Plates and struc. shapes	3.25c.
Bars, soft steel or iron	3.00c.
New billet reinforc. bars	3.00c.
Rail steel reinforc. bars	3.00c.
Hoops	3.75c.
Bands	3.20c.
Cold-finished bars	3.57c.
Hot-rolled annealed sheets (No. 24)	3.40c.
Galv. sheets (No. 24)	4.15c.
Hot-rolled sheets (No. 10)	3.05c.
Structural rivets	4.00c.
Small rivets	60 per cent off list
No. 9 ann'l'd wire, per 100 lb.	$3.00
Com. wire nails, base per keg (10 to 49 kegs)	2.65
Larger quantities	2.50
Cement c't'd nails, base 100-lb. keg	2.95
Chain, 1-in., per 100 lb.	7.15
	Net per 100 Ft.
Seamless steel boiler tubes, 2-in.	$16.91
4-in.	37.41
Hot-welded steel boiler tubes, 2-in.	15.70
4-in.	34.96

BUFFALO

	Base per Lb.
Plates and struc. shapes	3.20c.
Soft steel bars	3.05c.
Reinforcing bars	2.95c.
Cold-fin. flats and sq.	3.40c.
Rounds and hex.	3.00c.
Cold-rolled strip steel	5.25c.
Hot-rolled annealed sheets (No. 24)	3.25c.
Galv. sheets (No. 24)	4.00c.
Bands	3.30c.
Hoops	3.55c.
Hot-rolled unannealed sheets	3.10c.
Com. wire nails, base per keg	$2.75
Black wire, base per 100 lb.	2.35

BOSTON

	Per Lb.
*Beams, channels, angles, tees, zees	2.75c.
*H beams and shapes	2.75c.
*Plates—sheared, tank and univ. mill, ¼ in. thick and heavier	2.75c.
*Floor plates, diamond pattern	4.65c.
*Bar and bar shapes (mild steel)	2.65c.
*Bands 3/16 in. thick and No. 12 ga. incl.	3.15c. to 3.65c.
Hoops, No. 14 ga. and lighter	4.90c. to 5.40c.
*Half rounds, half ovals, ovals and bevels	3.90c.
Tire steel, rd. edge 1½ x ½ in. and larger	4.50c.
Smaller sizes	4.75c.
Cold-finished rounds and hexagons	3.70c.
Cold-rolled strip steel	5.50c.
Cold-finished squares and flats	4.30c.
*Blue annealed sheets, No. 10 ga.	2.65c.
One pass cold-rolled sheets No. 24 ga.	3.50c.
Blued stove pipe sheets, No. 24 ga.	3.90c.
Galvanized steel sheets No. 24 ga.	4.00c.
Lead coated (long ternes) No. 24 ga.	5.00c.

Base prices for 40,000 lb. orders; extras apply for smaller quantities.

PACIFIC COAST

	San Francisco	Los Angeles	Seattle	Base per Lb.
Plates, tank and U.M.	3.35c.	3.30c.	3.15c.	
Shapes, standard	3.35c.	3.30c.	3.15c.	
Wide-flanged beams and columns	3.45c.	3.45c.	3.50c.	
Soft steel bars	3.35c.	3.30c.	3.15c.	
*Reinforcing bars	2.90c.	3.00c.	3.00c.	
Hot-rolled annealed sheets (No. 24)	4.15c.	4.05c.	4.50c.	
Hot-rolled sheets (No. 10)	3.53c.	3.45c.	3.75c.	
Galv. sheets (No. 24)	4.75c.	4.65c.	5.00c.	
*Struc. rivets, ½ in. and larger	5.75c.	6.00c.	5.25c.	
*Cold finished steel Rounds	5.85c.	5.85c.	5.75c.	
Squares and hexagons	7.10c.	7.10c.	7.00c.	
Flats	7.60c.	7.60c.	8.00c.	
Common wire nails —base per keg	$2.80	$2.90	$2.80	
less carload				

*Subject to deductions for quantity.

Spelter Still Available at 4.65c. But Market Tone is Stronger

Tin Demand Reappears as Consumers and Dealers Book Metal at 45.25c.—Copper Inactive—Lead Improves

NEW YORK, Sept. 12.—Consumers of electrolytic copper are exhibiting considerable buying caution, despite the firm price structure and the likelihood of advanced quotations when code provisions are determined. Current trading is confined to scattered carlots, although light tonnages have been booked through December. Prices are quotably firm at 9c. a lb., Valley points, for electrolytic and Lake metal. Releases against old contracts are being received in undiminished volume. Producers have not opened first quarter books publicly, but there is an apparent willingness to make quiet placements for that period. Buyers are apparently indifferent and have submitted no inquiries concerning coverage for early 1934 requirements. Throughout the week scattered foreign lots were moved at 8c. a lb., c.i.f. usual European ports. Only negligible sales were recorded today on a first call listing of 7.95c. A sizable order has been received from a Japanese fabricator, at a price approximating the prevailing European quotation.

Tin

After avoiding the market for more than three weeks, consumers and dealers reentered last Friday and made sizable bookings at 44.75c. A fair volume of business was transacted yesterday and today at prices ranging from 45.25c. to 46c. a lb., New York. Current bookings are mostly for spot delivery, although some forward metal has been placed. Buying interest on the Continent and in Great Britain continues in light volume. London postings today on first call were £217 7s. 6d. for both spot and future standard, and £224 2s. 6d. for spot Straits. Singapore quotations rose to £223 10s. United Kingdom stocks are down 1153 tons from last week, and now stand at 16,430 tons. Shipments from the Straits, as of Sept. 9, totaled 1346 tons. Official statistics of American warehouse stocks indicate a current standing of 1986 tons as compared with 1183 tons on Sept. 1. During the first half of 1933 the United States bought 25,320 tons of tin, which was nearly 50 per cent of total world consumption.

Lead

Several large consumers continue to take metal, and comparatively heavy bookings are being made for both prompt and October supplies. Sellers are moving metal in excess of daily intake. If industrial activity continues unchanged, it is believed that active diversified purchasing will soon appear, as users of small tonnages replenish their depleted stocks. Current quotations are unchanged and firm at 4.50c. a lb., New York, and 4.35c., St. Louis. Consumers have not fully covered estimated September requirements, and October remains practically unsold. The steady domestic price structure, together with comparative firmness of London offerings and exchange values, is encouraging buyers to make more extensive forward commitments.

Zinc

Major producers have developed a more aloof attitude toward the prevailing quotation of 4.65c. a lb., East St. Louis. The market tone has a firmer tendency, and several sellers expect stronger prices to appear during the week. Statistics for last week disclose sales of over 1600 tons at an average price of 4.65c. There was considerably more quiet selling at this figure than the trade suspected. Current bookings are very light.

August stock reduction totaled 8893 tons, which, combined with the reductions of the three preceding months, reduced visible supplies over 42,000 tons. More than 100,000 tons of smelters' surplus stocks remain unsold. August output was the highest recorded in over two years. Unfilled orders as of Aug. 31 totaled 25,600 tons, which is equivalent to about three weeks' requirements. During August the major smelter producers sold 6126 tons of prime Western for August delivery, at a weighted average of 4.952c., East St. Louis. More than 5853 tons of metal was sold for forward delivery through December, at an average figure of 4.939c. a lb. The lower average quotation of future metal is a result of the distressed market condition during the latter part of August.

The failure of spelter prices to harden was again reflected in ore prices late last week, as Joplin quotations dropped $1 to $31 a ton. Production was 6000 tons, and predicted curtailment failed to materialize. Shipments totaled 4950 tons, and the net stock change was negligible.

The Week's Prices. Cents Per Pound for Early Delivery

	Sept. 7	Sept. 8	Sept. 9	Sept. 11	Sept. 12
Electrolytic copper, N. Y.*	8.75	8.75	8.75	8.75	8.75
Lake copper, New York	9.00	9.00	9.00	9.00	9.00
Straits tin, Spot, N. Y.	45.00	44.75	....	45.25	46.00
Zinc, East St. Louis	4.65	4.65	4.65	4.65	4.65
Zinc, New York	5.02	5.02	5.02	5.02	5.02
Lead, St. Louis	4.35	4.35	4.35	4.35	4.35
Lead, New York	4.50	4.50	4.50	4.50	4.50

*Refinery quotations; price ¼c. higher delivered in Connecticut.

Aluminum, 98 to 99 per cent pure, 22.90c. a lb., delivered.
Nickel electrolytic cathode, 35c. a lb., delivered; shot and ingot, 36c. a lb., delivered.
Antimony, 6.75c. a lb., New York.
Brass ingots, 85-5-5-5, 9c. a lb., New York and Philadelphia.

From New York Warehouse

Delivered Prices, Base per Lb.

Tin, Straits pig	47.25c. to 48.25c.
Tin, bar	49.25c. to 50.25c.
Copper, Lake	10.50c. to 11.25c.
Copper, electrolytic	10.25c. to 10.75c.
Copper, castings	10.00c. to 11.00c.
*Copper sheets, hot-rolled	17.12½c.
*High brass sheets	14.75c.
*Seamless brass tubes	16.37½c.
*Seamless copper tubes	16.62½c.
*Brass rods	12.25c.
Zinc, slabs	6.00c. to 7.00c.
Zinc sheets (No. 9), casks	9.75c. to 10.00c.
Lead, American pig	5.50c. to 6.50c.
Lead, bar	7.00c. to 8.00c.
Lead, sheets	8.25c.
Antimony, Asiatic	8.50c. to 9.50c.
Alum., virgin, 99 per cent plus	23.30c.
Alum. No. 1 for remelting, 98 to 99 per cent	18.00c. to 19.00c.
Solder, ½ and ½	30.00c. to 31.00c.
Babbitt metal commercial grade	25.00c. to 50.00c.

*These prices are also for delivery from Chicago and Cleveland warehouses.

From Cleveland Warehouse

Delivered Prices per Lb.

Tin, Straits pig	48.12½c.
Tin, bar	50.12½c.
Copper, Lake	10.25c.
Copper, electrolytic	10.25c.
Copper, casting	10.00c.
Zinc, slab	6.00c. to 6.25c.
Lead, American pig	5.35½c. to 5.50c.
Lead, bar	8.50c.
Antimony, Asiatic	9.00c.
Babbitt metal, medium grade	19.00c.
Babbitt metal, high grade	52.12½c.
Solder, ½ and ½	28.25c.

Old Metals, Per Lb., New York

Buying prices are paid by dealers for miscellaneous lots from smaller accumulators, and selling prices are those charged to consumers after the metal has been prepared for their uses. (All prices are nominal.)

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, hvy. crucible	7.00c.	8.00c.
Copper, hvy. and wire	6.75c.	7.75c.
Copper, light and bottoms	5.75c.	6.25c.
Brass, heavy	3.75c.	4.50c.
Brass, light	3.50c.	3.75c.
Hvy. machine composition	5.25c.	6.00c.
No. 1 yel. brass turnings	5.00c.	5.625c.
No. 1 red brass or compos. turnings	5.00c.	5.50c.
Lead, heavy	3.625c.	4.00c.
Zinc	2.75c.	3.25c.
Cast aluminum	7.50c.	8.75c.
Sheet aluminum	12.00c.	13.50c.

PLANT EXPANSION AND EQUIPMENT BUYING

NEW ENGLAND

Monsanto Chemical Works, 1724 South Second Street, St. Louis, has plans for construction of new plant for manufacture of ethyl alcohol on site adjoining works of Merrimac Chemical Co., Everett, Mass., a subsidiary interest. It will consist of several units, equipped for initial capacity of about 250,000 gal. per month. Cost over $500,000 with machinery. A new subsidiary is being organized under name of New England Alcohol Co., to operate plant. Central Aguirre Sugar Co., 140 Federal Street, Boston, is interested in new company and project.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Sept. 19 for four motor-driven compressor sets, circuit breakers, voltmeters, etc., and spare parts (Schedule 660), 1475 lbs. corrosion resisting steel tubing (Schedule 666) for Portsmouth, N. H., Navy Yard.

Choice Foods, Inc., Boston, recently organized by R. M. Dobbins, 126 State Street, and associates, has awarded general contract to Henry W. Horst Co., Fifteenth and Race Streets, Philadelphia, for new brewing plant on Soldiers' Field Road, Allston, Mass., including brew-house, bottling, storage and distributing, and other units. Cost over $80,000 with equipment.

Bureau of Yards and Docks, Washington, has secured appropriation of $100,000 for extensions and improvements in power plant at Portsmouth, N. H., Navy Yard, and plans early call for bids.

Aetna Brewing Co., 130 Bellevue Street, Hartford, Conn., has filed plans for new addition for mechanical bottling and other service. Cost over $40,000 with equipment.

C. O. Jelliff Mfg. Corpn., Southport, Conn., maker of wire cloth, has purchased entire assets of Alloy Products Co., Irvington, N. J., and removed equipment to Southport. Additional equipment has been purchased and company will produce large portion of wire for its own weaving purposes. Certain specialties will still be purchased in open market.

NORTH ATLANTIC

Bureau of Yards and Docks, Navy Department, Washington, has secured following appropriations for New York Navy Yard and soon takes bids: New one-story addition to structural shop and installation of equipment, $50,000; extensions and improvements in power plant, $475,000 with equipment; two 40-50-ton electric traveling cranes for drydock service, replacing present units, $300,000; extensions and improvements in telephone system, $24,000.

J. Chr. G. Hupfel Brewing Corpn., New York, is being organized by Anton C. G. Hupfel, president, J. Chr. G. Hupfel Co., Inc., 229 East Thirty-eighth Street and 244 Madison Avenue, real estate, to take over and operate Hupfel brewery, Thirty-eighth and Thirty-ninth Streets, between Second and Third Avenues. Plans under way for expansion and improvements, with construction of new mechanical bottling works. Equipment will be installed for initial capacity of 350,000 bbl. per year. Cost over $150,000 with machinery. Canada Dry Ginger Ale, Inc., 122 East Forty-second Street, P. D. Saylor, president, is interested in new Hupfel company.

Landow Bronze & Steel Corpn., Brooklyn, has been organized by Mitchell Landow, 2619 Davidson Avenue, Bronx, New York, and associates, to manufacture metal products of various kinds.

Port of New York Authority, Eighth Avenue and Fifteenth Street, New York, has authorized surveys and plans for new traffic tunnel under Hudson River from foot of Thirty-ninth Street, Manhattan, to Weehawken, N. J., totaling about 8000 ft., for which loan of $37,500,000 has just been secured from Government. In addition to traffic tube of steel and heavy cast iron plates, project will include power house, mechanical ventilation plant, machine shop and other mechanical units, to cost over $2,000,000 of fund noted, with equipment. Engineering department will be in charge. John E. Ramsey is general manager.

Titanium Pigment Co., 60 John Street, New York, has begun removal of old machinery from former plant of American Salpa Corpn., Spotswood, N. J., defunct, recently acquired for new works, and plans early installation of equipment for large production. Property totals 64 acres of land and group of buildings, which will be remodeled and extended. Cost over $600,000 with machinery. Company is affiliated with National Lead Co., 111 Broadway, New York.

Marine & Stationary Smoke Eliminating Corpn., New York, has been organized by Sergo Davitow, 111-49 147th Street, Jamaica, L. I., and Joseph F. Reardon, 21 Jackson Street, Hempstead, L. I., to manufacture smoke prevention equipment and devices.

Pan-American Airways, Inc., 135 East Forty-second Street, New York, has let general contract to Fred Howland, Inc., Realty Board Building, Miami, Fla., for first unit of new air base and marine airdrome at Miami, for handling transoceanic flying boats. It will be three-story, with docking, reconditioning and repair facilities. Cost about $250,000 with equipment. Other units will be built at later date with total cost of terminal of $1,000,000. Work will be carried out in connection with expansion and development program to cost about $5,000,000 including construction of four new flying boats for service to South America. J. T. Trippe is president.

Radiator Enclosures, Inc., Bronx, New York, has leased large factory space at 457-63 East 147th Street, and will occupy for new plant for manufacture of radiator covers and enclosures.

Alpine Brewing Co., Jersey City, N. J., recently organized, care of Maurice Kraut, 3010 Hudson Boulevard, architect, has plans for new five-story plant, 100 x 175 ft., on Connolly Avenue, including brew-house, bottling works, mechanical cooling, storage and distributing department, machine shop, etc. Cost over $400,000 with equipment.

M. Hoagland's Sons Co., Foundry Street, Rockaway, N. J., manufacturer of iron and other metal castings, plans rebuilding of portion of plant including pattern department, recently damaged by fire. Loss about $23,000 with equipment.

Henry Timm, Inc., Paterson, N. J., has been organized by Henry and Clifford H. Timm, 190 Oak Street, capital $50,000, to manufacture wire and wire products.

State Department of Institutions and Agencies, Trenton, N. J., John Ellis, commissioner, is planning construction of new mechanical shops and other structures, including installation of electric power, water and other utilities at state prison farm, Bordentown, N. J. Appropriation of $750,000 being arranged.

Densen Carton Co., Industrial Avenue, Ridgefield Park, N. J., manufacturer of corrugated paper boxes and containers, has let general contract to Cannie Construction Co., 56 Bergen Avenue, for one-tory addition, 100 x 120 ft., including improvements in present plant. Cost over $40,000 with equipment.

Union Brass Foundry, Inc., Newark, N. J., care of Charles A. Woodruff, Essex Building, representative, has been organized by John D. Henderson and Frederick L. Davis, Newark, to manufacture brass, aluminum and other metal castings.

Continental Distilling Corpn., Snyder Avenue and Swanson Street, Philadelphia, has authorized expansion and improvement program at liquor distillery, including construction of new units. Cost over $800,000 with equipment. Company is affiliated with Publicker Commercial Alcohol Co., 260 South Broad Street. S. S. Neuman is president.

School Board, Lebanon, Pa., plans new high school with manual training department, to replace Harding junior high school, destroyed by fire a number of months ago. Cost about $450,000 with equipment.

Progressive Service Co., 1900 Morgan Street, St. Louis, manufacturer of cutting dies and kindred mechanical equipment, has leased space at 90 South Cameron Street, Harrisburg, Pa., 6500 sq. ft., and will equip for new Eastern branch plant. George Deubel, vice-president, will be in charge at new location.

Mohawk Brewing Co., Pittston, Pa., plans new multi-story addition, including improvements in present brewery and installation of new equipment. Cost over $300,000 with machinery.

SOUTH ATLANTIC

Bureau of Yards and Docks, Navy Department, Washington, has secured appropriation of $1,000,000 for extensions and improvements in Naval Air Station, Pensacola, Fla., including new airplane hangar, with repair and reconditioning shop; steam power plant for central heating service, oil storage and distributing plant, waterworks and supply system with pipe lines, etc., automobile service and garage building, and other field structures. Bids will soon be asked.

Mechanical Equipment Co., St. Petersburg, Fla., has been organized by J. A. Zurflich and N. W. Upham, St. Petersburg, to manufacture machine specialties and other mechanical products.

American Enka Corpn., Enka, near Asheville, N. C., plans installation of new machinery, replacements in certain present equipment, with improvements and repairs in other machinery at rayon mill. Increased capacity will be arranged. Work will be carried out over period of months and will cost about $400,000.

Common Council Swainsboro, Ga., plans installation of pumping machinery and other mechanical equipment, pipe lines, etc., for municipal waterworks and sewage systems. Cost about $50,000. Robert & Co., Bona Allen Building, Atlanta, Ga., are consulting engineers.

Southeastern Natural Gas Co., 320 West Flagler Street, Miami, Fla., C. R. Ayers, president, has arranged for purchase of plant and business of Economy Bottled Gas Co., Seventy-third Street and N. W. Seventh Avenue, and will operate as a new unit of business, expanding capacity.

SOUTHWEST

Grone Brewing Co., Twenty-second Street and Clark Avenue, St. Louis, recently organized, is having plans completed by George E. Wells, Inc., Security Building, architect, for extensions and improvements in former brewery, location noted, with installation of new equipment. Cost over $100,000 with machinery. Edward A. Grone and F. J. Wade, Jr., are heads.

United States Indian Service, Department of Interior, Washington, has secured appropriation of $35,000, for new central steam plant for heating service at institution at Wheelock, Okla.; also fund of $26,000, for water supply system, including pumping machinery and other mechanical equipment at institution in vicinity of Choctaw, Okla.; and $57,000, for new central steam power plant for institution in Northern Navajo district, N. M.

Lawyers Lead & Zinc Co., Picher, Okla., care of C. J. Hindman, McBirney Building, Tulsa, Okla., president, recently organized, has acquired former mills and property of New Chicago Mines Corpn., near Picher. New owner will remodel plant and install equipment, including jigs, conveyors, milling machinery, etc. Cost about $50,000.

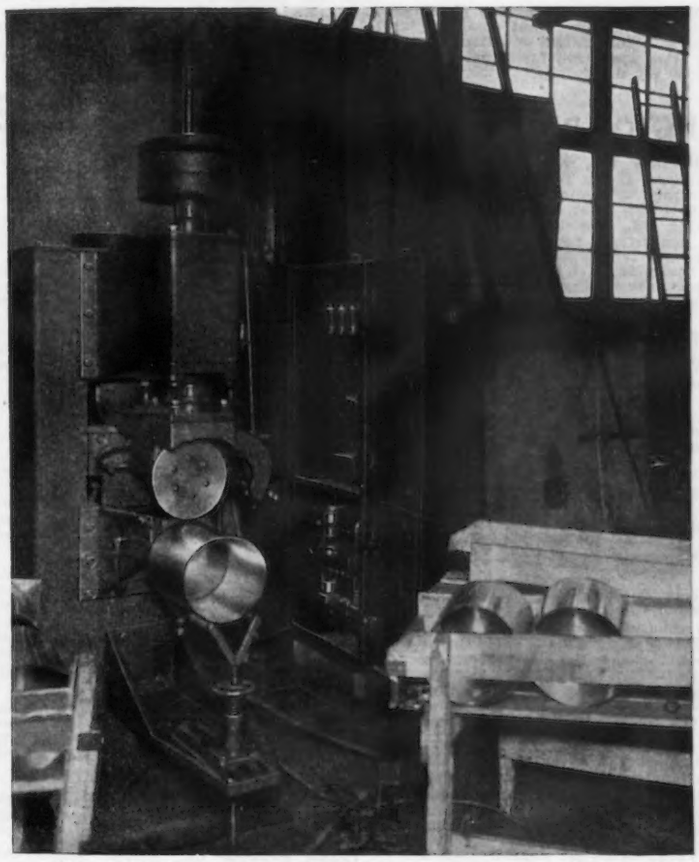
Phoenix Brewing Co., Eighteenth and Lafayette Streets, St. Louis, has filed plans for improvements and modernization, with installation of additional equipment. Capacity will be increased. Cost over $80,000. F. A. Ludewig Co., 4923 South Kingshighway, is architect.

American Cone & Pretzel Co., 1721 DeKalb Street, St. Louis, has plans for new multi-story food products plant on Main Street, near Victor Street. Cost over $100,000 with machinery, including automatic mixing equipment, traveling ovens, conveyors, etc. Ernest J. Hess, Title Guaranty Building, is architect.

Common Council, Lexington, Tex., plans installation of pumping machinery and other mechanical equipment, 50,000-gal. elevated

Production Doubled

with G-E Thyratron Control for Resistance Welding



Thyratron-controlled seam welder for white-lead containers at the National Lead Co. plant, Granite City, Ill.

THAT'S the experience of the National Lead Co. in welding steel kegs.

To quote: "We formerly welded with 300 to 400 interruptions per minute, using a mechanical interrupter, and experienced many shutdowns for repair and replacement of contacts, etc. With G-E Thyratron Control we weld with 1200 interruptions per minute. The control functions perfectly and permits doubling our production at a much lower over-all unit cost."

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No wonder that more than a hundred installations of G-E Thyratron Control equipment for line and spot welders have been made.

Here are a few of the materials which you can weld successfully with Thyratron Control: Stainless steel, mild steel, chromium- and cadmium- plated steel, terne plate (lead- and tin-coated mild steel), and various aluminum alloys. Send in the coupon to get the complete story of Thyratron Control for welding.

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General Electric Company,
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Please send me a copy of your bulletin GEA-1679 on Thyratron Control for Welding.

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301-148

steel tank on 100-ft. tower, pipe lines, etc., for waterworks and sewage system. Bids will soon be asked. Cost about $75,000. Dale & Schmidt, Norwood Building, Austin, Tex., are consulting engineers.

Todd Shipyards Corpn., 25 Broadway, New York, plans installation of one 300-ton traveling crane and number of smaller cranes for drydock and pier service at new ship repair plant on Houston ship channel, Houston, Tex., on which work soon begins. Entire project will cost $1,100,000.

SOUTH CENTRAL

United States Pipe & Foundry Co., Bessemer, Ala., with headquarters at East Burlington, N. J., has begun expansion and improvement program for large increase in production of cast iron pipe of different sizes, fittings, special castings, etc. Five new centrifugal pipe machines will be installed, with annealing furnace, three cupolas and complete auxiliary equipment. Work is scheduled for completion by close of year. Cost over $200,000 with machinery.

Water Department, Louisville, plans installation of pumping machinery and other mechanical equipment, pipe lines, etc., with new filtration plant, for extensions and improvements in municipal waterworks. Cost about $100,000. Allen & Vagtborg, Inc., 205 West Wacker Drive, Chicago, is consulting engineer.

Standard Brewing Co., South Johnson Street, New Orleans, is continuing expansion program and will build several new units in addition to structure recently referred to in these columns, including malt house, power house, motor truck service and garage building, storage and distributing plant. Equipment will be installed for capacity of about 300 bbl. per day. Cost about $250,000 with machinery. J. J. Lagarde, Maritime Building, is architect. Charles C. Trainer is company engineer.

City Council, Magnolia, Miss., plans installation of new oil-operated engine, pumping machinery and other mechanical equipment for extensions and improvements in municipal water system. Henry A. Mentz & Co., Hammond, La., are consulting engineers.

Gambrinus Brewing Co., 105 South Fourth Street, Louisville, plans extensions and improvements in two-story plant, Roseland Street, with installation of new brew-house, bottling, mechanical-cooling, conveying, power house and other equipment. Cost over $200,000 with machinery. P. A. Pardee is company engineer.

BUFFALO DISTRICT

International Business Machines Corpn., Endicott, N. Y., manufacturer of tabulating, computing, time recording and other kindred machines and parts, has approved plans for new one-story wing addition, about 68,000 sq. ft. space. Cost over $100,000 with equipment.

Congdon Auto Parts, Inc., Rochester, N. Y., has been organized by George E. Congdon, Rochester, and associates, to manufacture automobile parts and equipment. Company will take over and succeed to Congdon's Auto Parts Co., 532 Clinton Avenue South.

Buffalo Ankerite Gold Mines, Ltd., Stock Exchange Building, Buffalo, Edward G. Kinkel, secretary, is arranging new stock issue totaling about $250,000, portion of proceeds to be used for expansion and development in gold mining properties in Ontario, Can., including equipment installation.

Falconbridge Nickel Mines, Falconbridge, Ont., has let general contract to Carrington Construction Co., 46 McKenzie Street, Sudbury, Ont., for new one-story addition for machine shop, and storage and distribution. Cost about $30,000 with equipment.

WESTERN PENNA.

Pittsburgh Rolls Corpn., Forty-first and Willow Streets, Pittsburgh, manufacturer of steel rolls, tube mill rolls, etc., soon takes bids for new one-story addition, 40 x 200 ft. Cost over $80,000 with equipment. Company is subsidiary of Blaw-Knox Co., Blawnox, Pa.

Pittsburgh Plate Glass Co., Grant Building, Pittsburgh, has let general contract to R. P. Farnsworth & Co., 212 Nashville Avenue, New Orleans, La., for one-story factory branch, storage and distributing plant, 135 x 200 ft., at Poydras and Robertson Streets, New Orleans. Cost about $50,000 with equipment.

National Distillers Products Corpn., 52 William Street, New York, has let general contract to Sanderson & Porter, same address, engineers, for extensions and improvements in branch distilleries at Broad Ford and Large, Pa., formerly property of Overholt Distributing Co., recently acquired. New equipment will be installed. Cost over $200,000 with machinery.

Monongahela Valley Brewing Co., Fairmont, W. Va., recently organized, has leased property on Washington Street, and will modernize and equip for new plant. Cost over $75,000 with equipment. Walter J. Collins is company engineer.

Clark Toy Mfg. Co., Morchead, Ky., plans construction of new one-story plant at Huntington, W. Va., with installation of automatic machinery and other equipment for initial output of about 2000 toy units daily.

WASHINGTON DISTRICT

Maryland Distillery Co., Mercantile Trust Building, Baltimore, C. B. Baker, head, has let general contract to Engineering-Contracting Corpn., 504½ St. Paul Street, for new plant at Elkridge, Md., consisting of group of ten one and multi-story units as follows: Main distilling and fermenting building, 107 x 83 ft.; dry house, 35 x 77 ft.; storage and distributing plant, seven-story, 101 x 165 ft.; power house, 52 x 54 ft.; grain elevator and miscellaneous structures, including machine shop. Cost over $100,000 with equipment.

Bureau of Yards and Docks, Navy Department, Washington, asks bids until Oct. 4, for two turbo alternators, 1500 kw., and 500 kw. capacity, respectively, with auxiliary equipment, for Naval Academy, Annapolis, Md. (Specification 7414.)

Board of District Commissioners, District Building, Washington, soon takes bids for new pumping plant and interceptor station for sewage system at Anacostia, D. C., cost $231,000 with pumping machinery and other mechanical equipment. Appropriation authorized.

B. H. Hubbert & Sons, 3603 East Pratt Street, Baltimore, manufacturer of copper kettles, copper coils, etc., has let general contract to E. Eyring & Sons Co., 808 South Conkling Street, for new two-story plant on South Ponca Street, about 75 x 130 ft., for manufacture of brewing and distilling equipment. Cost over $30,000 with machinery. John F. Eyring, 808 South Conkling Street, is architect.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Sept. 19, for quantity of steel forgings (Schedule 551-R), 14,900 corrosion-resisting steel rollers (Schedule 690-R), 200 frictionless trunnion roller bearings (Schedule 692-R) for Washington Navy Yard; 64 30-gal. capacity steam jacketed kettles (Schedule 665) for Boston, Brooklyn, Philadelphia, Norfolk, Puget Sound and Mare Island Navy Yards; quantity of brass and copper pipe and tubing (Schedule 661) for Eastern and Western yards.

OHIO AND INDIANA

Shur-Foot Mfg. & Sales Corpn., Niles, Ohio, recently organized by William G. Jones and W. E. Cook, Niles, has leased local building and will occupy for plant for manufacture of safety tread devices and equipment for ladders, made of steel tubing, structural and other steel products, rubber, etc. Plant will be equipped for initial capacity of 150 tread units daily.

City Council, Municipal Power Department, Hamilton, Ohio, has authorized plans for extensions and improvements in electric power substations, transmission and distributing lines, including installation of switching and regulating equipment, high-tension equipment, etc. Cost over $85,000. Froelich & Emery Engineering Co., Second National Bank Building, Toledo, Ohio, is consulting engineer.

Blackburn Foundry Co., St. Bernard, Ohio, care of James B. O'Donnell, Carew Tower Building, Cincinnati, representative, has been organized by George E. Fee, St. Bernard, and associates, capital $50,000, to manufacture iron and other metal castings.

Common Council, Baltimore, Ohio, plans installation of pumping machinery and other mechanical equipment for extensions and improvements in municipal water system. Cost about $50,000. Financing being arranged. Jennings & Lawrence, 12 North Third Street, Columbus, Ohio, are consulting engineers.

Christian Moerlein Brewing Co., Provident Bank Building, Cincinnati, recently reorganized with capital of $5,000,000, has secured permission to arrange new stock issue of 500,000 shares, considerable portion of fund to be used for new multi-story plant, to be equipped for capacity of 500,000 bbl. per annum. Joseph H. Assel is secretary and treasurer.

Department of Public Works, Division of Highway Maintenance, Colerain Avenue, Cincinnati, has filed plans for one-story addition to mechanical repair shop on Bates Alley, near Cormany Avenue.

Cord Corpn., 105 West Adams Street, Chicago, has taken over Smith Engineering Co., 1982 West Seventy-fourth Street, Cleveland, manufacturer of propellers and allied equipment for airplanes, parts, etc., recently acquired, and will continue plant at same location as new unit or organization, developing increased capacity. W. H. Beal will be president of new subsidiary, and P. G. Kemp, vice-president.

International Beverages, Inc., 1300 Madison Avenue, Indianapolis, J. J. Dermody, head, soon takes bids for extensions and improvements in brewing plant, including new two-story addition. Cost over $60,000 with equipment.

Clouse Machine Products Co., Inc., Indianapolis, has been organized by R. W. Clouse and J. C. Goodlet, 4334 Broadway, to manufacture tools and other mechanical specialties.

Lynch Corpn., Anderson, Ind., manufacturer of glass-making machinery, glass-blowing equipment, etc., has concluded arrangements for purchase of plant and business of Miller Machine & Mould Works, Columbus, Ohio, manufacturer of similar machinery, and will consolidate with organization. Columbus plant will be continued as branch factory.

MICHIGAN DISTRICT

Fruehauf Trailer Co., 10940 Harper Avenue, Detroit, manufacturer of motor trailers, parts, etc., has plans for one-story addition. Cost over $30,000 with equipment. Albert Kahn, Inc., New Center Building, is architect and engineer.

Eaton Mfg. Co., 739 East 140th Street, Cleveland, manufacturer of automobile springs, axles and other accessories, has arranged for lease of plant of Alloy Spring & Axle Co., Jackson, Mich., in receivership, W. S. Butterfield, receiver, and will occupy for new branch works primarily for development of new products for automotive service.

Magnetic Tool Co., Inc., Detroit, has been organized by Julius G. Lowry, 7598 Melrose Street, and associates, capital $50,000, to manufacture electrical tools and kindred products.

City Council, Petoskey, Mich., plans municipal electric light and power plant for auxiliary service. Cost about $35,000 with equipment.

Goebel Brewing Co., Rivard Avenue and Maple Street, Detroit, has plans for new two-story power plant, 50 x 105 ft. Cost over $75,000 with equipment. Harley & Ellington, Inc., Stroh Building, is architect and engineer.

Pfeiffer Brewing Co., 3700 Beaufait Avenue, Detroit, recently reorganized, has plans for four-story and basement addition, 80 x 105 ft., including improvements in present plant, to develop annual output of about 300,000 bbl. Cost over $250,000 with equipment. Mildner & Eisen, Hammond Building, are architects.

MIDDLE WEST

Albert Schwill & Co., 309 South LaSalle Street, Chicago, manufacturer of malt products, has let general contract to James Stewart Corpn., 343 South Dearborn Street, for new addition to plant on East 103rd Street, South Chicago, for storage, distribution and production. Cost over $200,000 with equipment.

United States Air Corps, Chanute Field, Rantoul, Ill., is considering rebuilding of field structures recently destroyed by fire, including airplane hangar and repair shop, radio equipment units and photographic equipment buildings. Loss over $500,000 with equipment.

Liquid Meter & Register Co., 844 West Jackson Boulevard, Chicago, has been organized by Frank Schorik and Vincent Freml, to manufacture meters, registers and other measuring equipment and devices.

Board of Public Works, Alexandria, Minn., asks bids until Sept. 25, for equipment for municipal electric light and heating plant, including turbo-generator unit with condensers and accessories, superheaters, boiler feed water heater, etc. Burlingame & Hitchcock,

MODERN MACHINERY CALLS FOR MODERN METALS

NICKEL...

GOES BACK TO THE SOIL AND BRINGS NEW EFFICIENCY TO AGRICULTURE

FARMING is no longer a business of back-breaking toil and slow-moving horse power. The primitive methods of former days have steadily given way to ingenious equipment that does the work more easily, more quickly and more economically.

Where formerly tractors were operated at speeds comparable with those of "Old Dobbin," rubber-tired tractors are now available with top speeds of more than 30 miles an hour. This means that all types of tractor-drawn or tractor-powered equipment must be redesigned for higher speed operation.

Today there is scarcely any type of agricultural implement that could not be improved through the use of materials more resistant to the destructive forces of wear, stress, abrasion, corrosion, fatigue and shock. The same is true of the equipment used in other leading industries.

When nickel is combined with other metals under suitable conditions, a wide range of improved properties results . . . properties that enable the machinery manufacturer to turn out products that are more powerful, more enduring and more economical to operate and maintain.

No matter what properties you demand of a material or what purpose it must serve, there is available a commercial nickel alloy suited to your requirements. These nickel-alloyed materials come in a variety of compositions, each carefully established by exhaustive laboratory tests and field service.

We have an extensive experience data on the uses of nickel alloy steels, nickel cast irons, nickel bronzes, and other nickel alloys, and will be glad to send you full information on any application. Our engineers have had broad experience in the solution of problems involving the use of nickel. You may feel free to consult them at any time.

Nickel Alloy Steels

Among the most widely used alloys containing Nickel are the Nickel Alloy Steels—steels of vastly improved grain structure, strong, tough and highly resistant to shock and wear. One prominent tractor manufacturer uses 940 lbs. of Nickel Alloy Steel in every Diesel-powered model to assure greater freedom from wear and breakage. Nickel Alloy Steels are also used extensively in building automobiles, aircraft, locomotives; and in construction, agricultural, mining, oil, lumber and milling equipment . . . in fact, wherever the job calls for superior strength and toughness.

THE INTERNATIONAL NICKEL COMPANY, INC.

Miners, refiners and rollers of Nickel.
Sole producers of Monel Metal.

67 Wall Street - New York, N. Y.

PROGRESS? YES!

When we say that Mansfield Electrical Sheets are INHERENTLY GOOD, and they are, we do not mean that we feel satisfied with them. When they are perfect, we won't need to do much but rest, but now we are hustling constantly and making PROGRESS.

PROGRESS means to us doing a better job, giving you better sheets, better looking and better behaving, so that your job may be easier and that your motors and transformers may be better.

"Satisfaction is the worst enemy of progress and is one of the world's worst diseases."

C. F. Kettering

MANSFIELD
ELECTRICAL SHEETS

EMPIRE STEEL
CORPORATION
Mansfield, Ohio

Sales Offices:

New York, Dayton, Cleveland, Indianapolis, Chicago, Detroit, St. Louis, San Francisco

Sexton Building, Minneapolis, are consulting engineers.

Shakopee Breweries, Inc., Shakopee, Minn., C. T. Weiland, president, has plans for extensions and improvements in local two and four-story flour mill, to be converted for new plant. New equipment will be installed for brew-house, bottling, mechanical-cooling and other service; one-story power house will be built. Plant will be developed for initial daily capacity of 150 bbl. Cost over $100,000 with machinery. Robert J. Torrens, Shubert Building, St. Paul, Minn., is consulting engineer.

Blue Valley Brewery Co., Crete, Neb., has plans for new one and two-story plant, 40 x 130 ft., with L-extension, 25 x 40 ft., to be equipped for daily output of about 100 bbl. Cost close to $90,000 with equipment. George Wentzel, Davidson Building, Kansas City, Mo., is consulting engineer in charge.

Arvey Corpn., 3440 North Kimball Avenue, Chicago, has awarded general contract to Ullman & Nelson, 5940 North Barnard Street, for one-story addition to cardboard and heavy paper products converting plant, 55 x 135 ft. Rudbeck & Gross, 5334 Hutchison Street, are architects.

Hamm Brewing Co., 681 East Minnehaha Street, St. Paul, Minn., has plans for new one-story power plant, 56 x 190 ft. Cost over $75,000 with equipment. C. H. Johnston, 360 Robert Street, is architect.

United States Indian Service, Department of Interior, Washington, has secured appropriation of $35,000 for new central steam power plant at institution at Pine Ridge, S. D.; $23,000 for central steam heating system with pipe lines, etc., at Flandreau, S. D.; $35,000 for central steam power house for heating service at Wahpeton, N. D.; water supply systems, including pumping machinery and accessories, at Crow Creek, S. D., $25,000, and Tongue River, Mont., $45,000. Early call for bids planned.

◀ PACIFIC COAST ▶

California & Hawaiian Sugar Refining Corpn., Ltd., Matson Building, San Francisco, has plans for extensions and improvements in refining plant at Crockett, Cal. Cost about $55,000 with equipment. Henry Dewell, 55 New Montgomery Street, San Francisco, is engineer.

American Brake Shoe & Foundry Co., 74 New Montgomery Street, San Francisco, has asked bids on general contract for one-story foundry addition at South San Francisco plant. Cost about $50,000 with equipment. K. Theill, 580 Market Street, San Francisco, is engineer. Company headquarters are at 230 Park Avenue, New York.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Sept. 19, for one motor-driven ball bearing band saw (Schedule 634), 160,000 lb. cold rolled soft steel sheets (Schedule 647), one laundry press and one laundry under-driven extractor (Schedule 636) for Mare Island, Cal., Navy Yard.

Walter J. Wallace, president, Growers' Security Bank, Delano, Cal., is head of project to construct and operate local winery. Plans have been drawn for initial unit, one-story, 150 x 150 ft., to be equipped with tanks, vats, conveyors, fermenting machinery, etc. Cost over $75,000 with equipment. G. A. Graham, 613 Nineteenth Street, Bakersfield, Cal., is building contractor.

Board of Trustees, State College, Pullman, Wash., is considering construction of new power plant at institution to cost about $200,000 with equipment. Financing being arranged. Program will also include new science building, cost about $250,000 with equipment.

Spokane Brewing & Malting Co., West 901 Broadway, Spokane, Wash., has plans for new four-story addition for bottling works, mechanical-cooling and malt house, and will make improvements and modernize present plant to develop annual capacity of about 150,000 bbl. Cost $100,000 with equipment. G. A. Pehrson, Old National Bank Building, is architect.

Stauffer Chemical Co., Rives-Strong Building, Los Angeles, manufacturer of borax and heavy chemical products, has filed plans for one-story addition to plant on East Twenty-sixth Street, 100 x 200 ft. Cost over $50,000 with equipment.

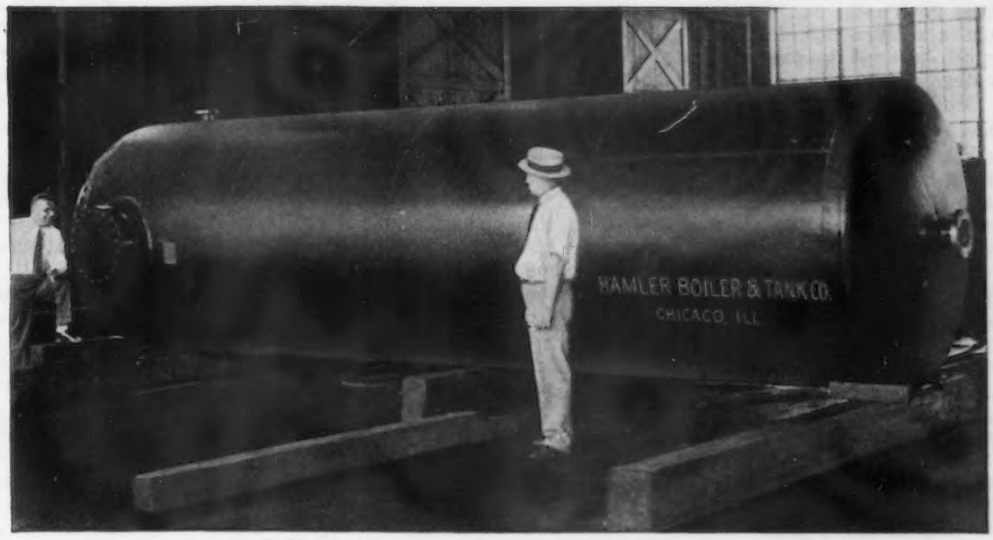
United States Indian Service, Department of Interior, Washington, has secured appropriation of $32,000, for new central steam power plant for heating service at institution at Truxton Canyon, Ariz.; also, for water supply system with pipes lines, etc., for institution in Southern Navajo district, Ariz., $22,000.

Another Industry turns to

INGOCLAD

Trade Mark Registered

STAINLESS-CLAD STEEL MADE BY THE INGERSOLL INGOT PATENTED PROCESS



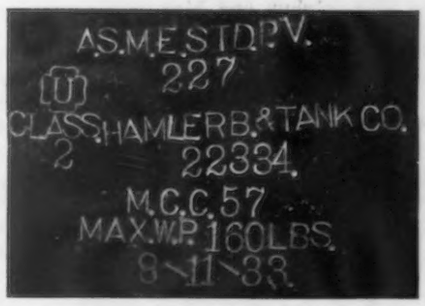
The large Autoclave made entirely from IngOclad was recently fabricated by the Hamler Boiler & Tank Company, of Chicago, for one of the largest packing companies. This pressure vessel, handling a charge of 30,000 lbs., is 26 ft. long and 6 ft. in diameter, with walls 13/16 inch thick, and heads of 1 inch thickness. The IngOclad used throughout provides a 20% thickness of 18-8 stainless steel on the interior of the vessel, giving the contents full stainless steel protection against corrosion and rust.

Protects your Product and Lowers Equipment Cost

IngOclad is an economy product designed to provide full stainless steel protection at much lower cost. Only the finest quality of stainless steel is used wherever working contact is made with your product. The use of stainless steel is thus brought within the investment range of all industries and all plants. Marked savings are not only made on the original equipment, but maintenance is much lower, better sanitation is insured, costly damages from rust and corrosion are eliminated, and your product is protected against discoloration and change of flavor, or odor.

Industry after industry is turning to IngOclad. Users and fabricators of products for the Food Industry, Chemical Industry, Soap Industry, Drug Industry, Paper Industry, Dairy Industry, Beer and Beverage Industries, etc., are especially invited to write for more specific information as to how IngOclad can serve them.

—Section of Test Bar showing butt-weld of stainless-clad plates. Stainless steel welding rods of 25% chromium and 12% nickel were used throughout.



—A.S.M.E. approved plate on Autoclave shown above.

—Stainless cladding 13/64". | Mild Steel 51/64".

—A.S.M.E. Test Bar—actual dimensions taken from Autoclave head.

INGERSOLL STEEL & DISC COMPANY

(A Division of Borg-Warner Corporation)

Specialists in High Carbon, Alloy and High Speed Steel and Stainless-Clad Sheets

310 South Michigan Ave., Chicago, Illinois

Plants: Chicago, Illinois, and New Castle, Indiana

What Is An Alloy Steel?

(*Concluded from Page* 15)

the material is dutiable as an alloy steel. These limits are 1.00 per cent for manganese and silicon, and smaller amounts for such elements as vanadium, molybdenum, tungsten, etc."

"A steel which contains more than 1.00 per cent manganese or more than 0.50 per cent nickel but which is not silicon-killed might be considered an alloy steel, but in view of the fact that such steel would be made without alloy practice, I should be very much inclined to put it in a special category."

"The high-sulphur and phosphorus steels are not plain carbon steels. But since sulphur and phosphorus are not metallic elements and since the word alloy connotes two or more metallic elements, some other term should be coined for these."

"I realize, of course, that copper-bearing sheet steel and high-sulphur screw stock are not commonly classed as alloy steels. But this is a dilemma for which I see no solution other than adopting the above definition [any steel to which has been added a special element which confers on the finished product some unusual property]. Or should one say—an alloy steel is any steel for which the customer has to pay an extra price!"

It will then be seen that, from the divergence of opinion as to whether certain types of steels are alloy steels and as to just what is the best definition of an alloy steel, it is extremely difficult to reconcile the conflicting opinions.

Three Classes of Steels Suggested

To the author it seems that, based on the opinions reviewed, steels might be divided into three classes:

1. Plain carbon steels
2. Special general-purpose steels
3. Alloy steels

There is general agreement as to what the plain carbon classification includes. Under special general-purpose steels there might be included the high-sulphur and high-posphorus steels as well as those containing selenium, tellurium and any metalloid additions which specially affect the properties of plain carbon steels for special purposes.

As to alloy steels, these may be suggested as included under the following definition:

> *An alloy steel is one that differs markedly in physical properties, (mechanical, electric, magnetic, etc.), or in resistance to atmospheric or chemical action (whether at normal or at elevated temperatures), from plain carbon steel, because of the addition of metallic elements other than those already present in plain carbon steels, or because of a considerable increase in the metallic elements silicon and/or manganese usually present in plain carbon steels.*

This is a slight modification of one of the definitions received through the questionnaire. Manifestly the metalloid steels—high-sulphur and high-phosphorus—would not come under this classification. This definition would include of course the low-vanadium, molybdenum, nickel, chromium as well as the low-copper steels and naturally any other steels containing titanium, columbium, zirconium and so on. This solution of the question, based on the replies which have been here reviewed, is suggested.

In this connection such a threefold classification would perhaps assist in the collection of alloy steel output data. Statistics of the alloy steel industry, as now compiled by the American Iron and Steel Institute, are not complete or definite. The returns are left to the reporting company which, in view of the conflict of opinions as to what is an alloy steel, probably do not give uniform or complete results. One company producing low-copper sheets would classify its output for the year in one way, while another would do otherwise. Thus the present statistics, while showing trends, are not absolute. Some official solution of this matter by an authoritative association or group is earnestly urged.

Welding Technique for Nickel

(*Concluded from Page* 26)

does not hold good, and that a minimum value of, say, ⅛ in. must be maintained.

The tools required for hammer-welding nickel sheets consist of an anvil arranged to be heated to a constant temperature of 800 deg. C. (1450 deg. F.), which must be maintained during hammer-welding, an oxy-acetylene or oxy-hydrogen welding unit, and a welding hammer (a 1-lb. hammer with long handle).

Previous to hammer-welding the edges of the sheets must be scraped or brushed with a steel brush, and the perfectly bright surfaces freed from oily or fatty impurities with organic solvents. The cleaned surfaces must then be carefully guarded against dirt of any type, even oily finger prints exerting an undesirable influence on the process. Some hammer-welders claim to obtain best results by painting a thin paste of flux on the surfaces to be welded. Experience has shown, however, that this is entirely unnecessary if perfectly clean welding surfaces are maintained, and since the application of fluxes necessitates additional effort in order to remove the last traces from the weld, besides introducing additional source of trouble where even slight traces of flux remain, most experienced hammer-welders refrain from this practice.

Welding Nickel Alloys

The most important nickel-rich alloys to be considered here are Monel metal and the various synthetic alloys resembling Monel metal in composition (Nicorros, Corronil, Silveroid, etc.), and, to a lesser degree, the copper-nickel alloys containing from 30 to 50 per cent nickel.

There is not much difference between the welding of nickel-rich alloys and simple nickel. As the former are more easily overheated, particular attention must be paid to the arrangement and handling of the flame. It is absolutely necessary to keep the weld metal quiet, since even a slight movement indicates excessive heat, the application of which invariably causes brittle and weak welds. Rods or strips of the same composition are used as filling material. Left-to-right welding is to be preferred. The same applies to the other copper-nickel alloys indicated above. Nickel silver alloys containing from 12 to 22 per cent nickel, and from 18 to 25 per cent zinc, react differently, their welding properties resembling those of brass.

Plymouth Uses Induction Type Ovens

(*Concluded from Page* 23)

automatically lowered. During the time when the ovens are empty, no heat is generated except a small amount due to the resistance loss in the inductor coils.

Working conditions around the ovens are excellent, as no fumes or hot air escape into the room. Since nothing in the ovens is so hot as the painted parts being baked, the fire hazard has been almost entirely eliminated. Experience with the ovens has been so successful that similar installations are contemplated in other Chrysler divisions.

The expansion behavior of refractories when heated to temperatures as high as 1800 deg. C. has been studied by the Bureau of Standards. Some 36 different refractory materials were investigated, including chrome ores, magnesites, fire clays, zircons, bauxite and artificial corundum. The results of the tests are reported by R. A. Heindl in research paper RP562, obtainable from the superintendent of documents, Washington, at 5c. a copy.

Mixture vs. Fusion

A lump of coal and a diamond—both are carbons, but the diamond has been made the more valuable by the fusing process of vast elemental forces.

No mere mechanical mixture of chemicals can work as efficiently or as economically as a combination of balanced alkalies which have been *fused* together—Wyandotte Metal Cleaners.

We don't ask you to take our word for it. We'll let Wyandotte speak for itself right in your own plant. If Wyandotte can't help you turn out better work more economically, we don't expect you to buy it.

THE J. B. FORD COMPANY, WYANDOTTE, MICHIGAN

Wyandotte
Metal Cleaners

Code Is Submitted by Structural Steel and Iron Fabricating Industry

(Concluded from Page 36)

of any product for the purpose of selling such product at a price less than that at which it is customarily sold under a proper description.

J.—Allowing to any purchaser of any product or to any owner or contractor to whom such product is furnished or for whom any erection work has been or is to be done any back charge or credit upon the price of such product or such erection work, except a fair and reasonable back charge or credit for an actual failure to fabricate such product and/or do such erection work in accordance with the provisions of the contract therefor, when the effect thereof is to allow to such purchaser, owner or contractor a secret rebate on the price of such product or erection work.

K.—Selling any product or doing any erection work thereon in combination with any other product or material or work, unless such other product or material or work shall be included in the aggregate price at the fair value of such other product or material or work.

L.—Making to any purchaser or prospective purchaser or to any owner or contractor any promise to meet any and all bids which may thereafter be made to such purchaser or prospective purchaser owner or contractor for any work.

M.—Knowingly bidding for any work or mentioning to the purchaser, owner or contractor any price for such work after the contract for such work shall have been let to another member of the Code.

N.—Designing any structure otherwise than in accordance with the requirements of the standard specifications of the Institute at the time in effect except in cases not covered by such specifications or in which other requirements shall be specified by the purchaser, owner or contractor for whom such structure shall be designed.

O.—Reporting to any insurer under a workmen's compensation or public liability insurance contract any payroll showing other than the actual amounts paid to employees on the work covered by such insurance for the period or periods stated in such payroll for the purpose or with the effect of reducing any premium for such insurance below the premium therefor which would be payable if the correct amounts paid to such employees for such period or periods were reported to such insurer.

P.—Aiding or abetting any general contractor or other purchaser or prospective purchaser of any product in the practice commonly known as "bid peddling" by submitting any bid to, or agreeing on any price with, such general contractor, purchaser or prospective purchaser for the sale of any product and/or the erection work thereon, except as hereinafter in this paragraph P provided, after such general contractor, purchaser or prospective purchaser shall have received bids for the sale of such product and/or for such erection work and shall have itself submitted to the owner of any structure or to any contractor for work thereon its bid for any part of such work including the furnishing of such product and/or such erection work. Nothing in this paragraph P shall be deemed to prevent any member of the Code which shall have bid to anyone for the sale of such product and/or for such erection work prior to the time at which such general contractor, purchaser or prospective purchaser shall have submitted its said bid from accepting from such general contractor, purchaser or prospective purchaser the contract for the sale of such product and/or for such erection work at a price which shall be not less than the lowest price bid therefor to such general contractor, purchaser or prospective purchaser prior to the time at which it submitted its said bid, unless such general contractor, purchaser or prospective purchaser shall have previously accepted another bid for the sale of such product and/or for such erection work, all subject, however, to the provisions of Article VII of the Code.

Q.—Making any bid or agreeing to any price for the sale of any product or products and/or the erection work thereon in which any materials are to be used which shall not have been manufactured in the United States unless such bid or the agreement for such price shall show that such materials are to be imported materials and shall also show the difference in cost of such imported materials as compared with the cost of similar materials manufactured in the United States.

R.—Inducing or attempting to induce any prospective purchaser to purchase any product by assisting such prospective purchaser to procure anyone to do the erection work thereon otherwise than in compliance with the provisions of the Code relating to hours of labor and rates of pay or by guaranteeing that the cost of such erection work when so done will not exceed a certain amount.

S.—Any violation of any other provision of the Code whether or not therein expressed to be such, or using or employing any practice not hereinabove in this Schedule F described which the members of the Code at a meeting thereof by the affirmative vote of such members having the right to cast at least two-thirds of all the votes that might be cast at such meeting, if all the members of the Code were present thereat, shall have declared to be a practice that would tend to defeat the policy of Title I of the National Industrial Recovery Act and, therefore, an unfair practice, and of which determination the Secretary shall have given notice to the members of the Code and to the President.

August Steel Ingot Production Was 9.4 Per Cent Under July

PRODUCTION of Bessemer and open-hearth steel ingots during August was 2,900,611 gross tons, or 107,430 tons daily, according to the calculations of the American Iron and Steel Institute, which receives figures from companies which made 96.57 per cent of total 1932 steel output. This represents a decline of 9.4 per cent from the July production of 3,203,810, or 128,152 tons daily.

With 27 working days in August, the country's total steel making capacity was engaged at 49.42 per cent, as against 58.95 per cent in the preceding month and 45.96 in June.

Steel ingot production in the first eight months of 1933 amounted to 15,093,613 tons, as compared with 9,350,662 tons in the corresponding 1932 period, and with 13,322,833 tons for the entire 12 months of that year.

PRODUCTION OF OPEN-HEARTH AND BESSEMER STEEL INGOTS
(Gross tons)
Reported for 1933 by Companies Which Made 96.57 Per Cent of 1932 Ingot Output

1933	Open-Hearth	Bessemer	Calculated Output All Companies: Monthly	Calculated Output All Companies: Daily	No. of Working Days	Per Cent Operation
January	885,743	109,000	1,030,075	39,618	26	18.23
February	922,806	126,781	1,086,867	45,286	24	20.82
March	784,168	94,509	909,886	33,699	27	15.50
April	1,180,893	135,217	1,362,856	54,514	25	25.08
May	1,716,482	216,841	2,001,991	74,148	27	34.11
June	2,211,657	296,765	2,597,517	99,904	26	45.96
July	2,738,083	355,836	3,203,810	128,152	25	58.95
August	2,430,750	370,370	2,900,611	107,430	27	49.42
Eight Months	12,870,582	1,705,319	15,093,613	72,916	207	33.42

The figures of "per cent of operation" are based on the annual capacity as of Dec. 31, 1932, of 67,386,130 gross tons for Bessemer and open-hearth steel ingots.

PRODUCTION OF OPEN-HEARTH AND BESSEMER STEEL INGOTS
(Gross tons)
Reported for 1933 by Companies Which Made 93.71 Per Cent of 1932 Ingot Output

1932	Open-Hearth	Bessemer	Calculated Output All Companies: Monthly	Calculated Output All Companies: Daily	No. of Working Days	Per Cent Operation
January	1,230,907	160,633	1,484,991	57,115	26	26.41
February	1,230,970	157,067	1,481,253	59,250	25	27.46
March	1,149,193	193,944	1,433,337	53,087	27	24.55
April	1,036,163	144,197	1,259,629	48,447	26	22.40
May	950,838	103,593	1,125,243	43,279	26	20.01
June	755,068	100,249	912,757	35,106	26	16.23
July	653,039	102,916	806,722	32,269	25	14.92
August	696,122	97,323	846,730	31,360	27	14.50
September	804,470	124,970	991,858	38,148	26	17.64
October	885,773	132,876	1,087,058	41,810	26	19.33
November	838,419	128,844	1,032,221	39,701	26	18.36
December	724,917	81,932	861,034	33,117	26	15.31
Total	10,955,879	1,528,544	13,322,833	42,701	312	19.75

The figures of "per cent of operation" are based on the annual capacity as of Dec. 31, 1931, of 67,473,630 gross tons for Bessemer and open-hearth steel ingots.

DO YOU HAVE THESE TROUBLES IN SHEARING ROUND HEADS?

Shearing a round head from a square plate or sheet looks simple, but mill men know it is difficult. If the center is only a few thousandths out of proper location, the result is a spiral instead of a circle.

To correct this (if you are not using Quickwork equipment) you must adjust the fixed center by guess-work and try again because the exact center location cannot be determined visually or by measurement.

And when shearing heavy round heads from square plate ¼" or heavier you have to first take the plate to a squaring shear and trim off the four corners. Even then the job is a difficult one.

The Quickwork Rotary Shear and Circular Attachment overcomes *all* of these difficulties. A patented self centering device finds the exact center location quickly and automatically without "cut and try" methods. It shears round heads from square plates up to 1" thick throughout the 360° in one operation at 70 ft. per min. And it is *not* necessary to first trim off the corners. See illustration.

THE QUICKWORK CO. *(H. Collier Smith, Jr., Pres.)* ST. MARYS, OHIO

"QUICKWORK"

(REGISTERED IN U.S.A. AND FOREIGN COUNTRIES)

EQUIPMENT FOR STRAIGHT, IRREGULAR, CIRCULAR AND ELLIPTICAL CUTTING, BEVELING AND FLANGING OPERATIONS
CABLEGRAMS "QUICKWORK" ALL CODES

The NEWPORT ROLLING MILL CO.

•

Since 1891 producers of

HIGH GRADE IRON *and* STEEL SHEETS

FOR EVERY PURPOSE

NEWPORT LONG TERNE SHEETS

Special heat treatment of the base metal before coating assures sharper and more accurate drawing. The coating adheres to the base and spreads with the drawing, thereby remaining continuous and unbroken.

•

Hot and Cold Rolled Sheets
Newport Electrical Sheets
GOHI Pure Iron-Copper Alloy
Globe Brand Galvanized Sheets
GOHI Enameling Sheets
Kentucky Copper Bearing Steel
Newport Long Terne Sheets

THE NEWPORT ROLLING MILL CO., NEWPORT, KY.

JUST BETWEEN US TWO

From the Heart Out

ONE of our field men was introduced the other day to the distinguished inventor of a precision device that has attained world-wide acceptance. The great man said graciously, "I feel honored to meet a representative of The Iron Age. *That is the paper in which we live.*"

This singular expression came, in the immortal words of Joe Weber of Weber and Fields, "from the heart out." May we always merit the affection it implies.

Lord, save us from the particularly obnoxious sin of overvaluing our contribution to the world's advance, but the fact cannot be gainsaid that when industry scattered, with the passing of the guilds—those days when men engaged in the same craft worked, ate and lived together—good trade papers became a necessity.

Some few geniuses may get farthest working alone, but most of us require the stimulus provided by knowledge of the progress being made by others engaged in the same line of work as our own.

Even though it falls short of perfection in supplying that knowledge, the good trade paper is none-the-less an essential tool in the kit of today's craftsman, whether he works with medicines or metals.

Please, Mister!

A SUBSCRIBER inquires whether he should "buy, sell or hold" stock in two well-known companies in the industry. "And," he adds, "please let me know the probable price range for the next few months."

Maybe there's a surer way of losing friends than handing out advice on stock market gyrations, but to date we haven't run across it. So, dear subscriber, on the altar of friendship we sacrifice our claim to omniscience.

The other day a hardware dealer sent our associate publication, Hardware Age, a certificate for 100 shares of a certain gold mining stock, with instructions to sell at the right time, thus setting a new all-time high in buck-passing.

Eagle, Fly High

WHO of us does not glow like a Neon sign when a prediction we have made comes to pass or when an important suggestion of ours is acted upon?

We are phosphorescing right now over the NRA's recent recommendation that the Reconstruction Finance Corporation lend money to industry to sustain the blue eagle's flight.

You will recall this entirely sensible idea was first enunciated in The Iron Age of July 13, page 9. Hooray for us!

From Television Equipment to Potato Harvesters

THE swelling popularity of investment trusts seems to be due largely to desire for the safety provided by diversification. At one crack you can buy part-ownership of an entire paddock of blue ribboners.

Diversification has always been a favorite theme song of ours in luring advertisers into the pages of The Iron Age, for if ever there was a diversified field, it is the metal-working industry. For evidence, run your eyes over this specimen handful of products made by this week's list of new subscribers:

Television Equipment	Roller Skates	Surgical Instruments
Truck Bodies	Glass Machinery	Potato Harvesters
Hair Clippers	Vault Lights	Oil Heaters
Vacuum Cleaners	Rasps	Tractors
Handle Bars	Watchmen's Clocks	Radio Parts
Timing Gears	Auto Trunks	Laboratory Equipment

At first glance there is little relation among handle bars, forceps, glass-making machinery and watchmen's clocks, but, to paraphrase the Kingfish, "They is all brothers in the lodge." All are made of metal, in plants using metal-working equipment. It's a mighty industry.—A.H.D.

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NTY-NINTH YEAR OF SERVICE TO THE METAL WORKING INDUSTRY

SEP 22 1933

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HYPOID GEARS

(OFFSET SHAFTS)

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Monday is washday

IT is an almost universal custom, that Monday is washday, because that has been found to be the best day for that job. Likewise, thru-out industry it is almost universal for pyrometer users to employ Chromel-Alumel couples and lead wire, because they have been found best for the job. Chromel couples can be used up to 2000° F. and beyond, with long life. At heat-treating temperatures, they are guaranteed to be accurate with ± ¾%. The lead wire and couple are of the same material which eliminates all "errors of compensation." The couples need not be "packed" in the protection tube, which fact makes them more responsive. When worn out at the weld, the other ends may be welded, and thus double-service obtained. For technical data on Chromel couples, send for Catalog-GH. Hoskins Manufacturing Co., Detroit, Mich.

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